

'Around the World'

(Concluded from Page 10, Column 5)

In other parts of the Abbey are buried Henry VII and his queen, Elizabeth of York, James I, Edward VI, George II and his queen, Caroline of Anspach, Oliver Cromwell and his mother and sister, Mary Queen of Scots, Charles II, William and Mary, Bloody Queen Mary, Queen Elizabeth, Edward the Confessor and his queen, Editha, Edward I, Edward V and his brother, Henry III, Henry V, Edward III and his queen, Philippa, Richard II and his queen, Anne of Bohemia, and Joseph Addison, founder of the Spectator and model of prose style for aspiring journalists of today.

The Coronation Chair, to which is fastened the famous Stone of Scone, is placed against the Stone Screen at one end of the Chapel of Edward I.

This Stone, said to be the one used as a pillow by Jacob at Bethel, originally was used at the coronation of Scottish kings for many centuries, and since the time of Edward I it has been the coronation seat of every crowned English monarch.

In the north aisle of the Choir are buried and commemorated many English musicians and composers, hence the name, Musicians' Aisle. Charles Darwin, Lord Kelvin, and other great scientists also rest here.

The most magnificent part of the Abbey is the Chapel of Henry VII, added to the west end of the original building.

Bizarre is the word for Westminster Cathedral, the huge Roman Catholic church which looks as though it belonged in ancient Babylon or, say, Egypt or India. Yet it was not begun until 1895, and even yet is not completely finished inside.

Whitehall might well be named Government Row. It is lined with governmental buildings throughout its length, from Charing Cross down almost to the Houses of Parliament.

At its north end is the Admiralty, headquarters of the entire British Navy, and in the same block are the Horse Guards main offices, Dover House (the Scottish Office), and other governmental offices. On the other side of Whitehall is the War office.

The Colonial Office, the Home Office, more Government Offices, and the United Service Institute are also in Whitehall. In the center of the road, right in front of the building containing the Colonial and Home Offices, is the Cenotaph, the national memorial to those Britishers who fell in the World War.

Grunow Begins 1938 Radio Line Showings

CHICAGO—Following the introduction of the 1938 line of Grunow radios at General Household Utilities Co.'s annual convention May 24 and 25, Sales Promotion Manager J. J. Davin opened the series of distributor-dealer meetings with a three-day open house at headquarters of Specialties Distributing Co., Detroit, May 28 to 30.

The second meeting, June 1 to 4, is scheduled for the showrooms of E. A. Wildermuth Co., New York City. In addition to Mr. Davin, Division Manager Leonard C. Welling and Sales Manager Harry Alter will also be in attendance.

Other meetings scheduled are:

June 5 and 6, Newark; June 7 and 8, Motor Parts Co., Philadelphia; June 9 to 11, Stern & Co., Hartford, Conn.; June 13 to 16, Harry Alter Co., Chicago.

Divisionmen Darden, Finger, Gilmore, Hutchings, Kane, Peck, Thompson, Young, and Newmark will be in charge of other division meetings, which are expected to be completed by mid-July.

Denver Dealers Expect Lower Volume, Higher Profits Under Code

(Concluded from Page 1, Column 2)

Roebuck & Co. and Montgomery Ward arbitrarily signed the code, they have been unable to obtain endorsement from their home offices, and are not operating under it.

Declaring that the code is a step towards profitable refrigerator merchandising here, E. M. Rowland of the Public Service Co., and member of the code governing board, said:

"If major outlets continue to support the agreement, a disastrous price war will have been averted. If the code fails, somebody is going to get a lot of refrigerator cheap. There can be as little doubt that such a war would give an enormous stimulus to refrigerator buying, as that the code has and will continue to discourage sales to a certain extent.

"It would seem to the utility's advantage to oppose the code and foster a program of increased refrigerator buying since it collects on current consumption for the city. However, we know that the electric refrigerator profit to the dealer has amounted to practically nothing during the last two or three years.

"We feel that a price war now would not only crush the independent dealer, but would encourage department and furniture stores to take the final step and stop handling refrigeration altogether."

Reports from dealers show that the code has done much to clear the refrigeration situation.

"The morale of our sales force has increased 100%," says G. A. Herron, appliance manager of the May Co., department store. "The men no longer find themselves being chiseled out of deals at the last minute by another salesman offering \$5 more on a trade-in, a discount, or some other premium. I look for the code to stay.

"Although this season's volume may be slightly under normal because customers are unable to obtain sufficiently large allowances on trade-ins," says Pierre Weill, appliance manager in the Denver Dry Goods Co., "the code has increased our margin of profit so that it more than compensates."

Electrolux Lowers Price On 4-Ft. Model in N. Y.

NEW YORK CITY—A price reduction on the 4-cu. ft. Servel Electrolux gas refrigerator was advertised recently by Consolidated Edison Co. of New York, Electrolux distributor in this territory.

The new price was not mentioned in the advertisement, but reports indicate that the 4-cu. ft. model has been selling at \$121.50 since May 17. Previous price was \$134.45.

The local office of Servel Electrolux declares that the new price has not been established nationally.

Officers of Rempe Co. Elected at Meeting

CHICAGO—At a recent meeting of the board of directors of the Rempe Co. George A. Rempe was reelected president; Lester Rempe, vice president and treasurer; and C. Rempe Denver, secretary.

J. O. Shultz, formerly of Brunswick-Kroschell Co., Chicago, and of Triumph Ice Machine Co., Cincinnati, was appointed general manager in charge of sales, and George T. White, formerly of the Allied Golf Co., Chicago, was named general superintendent in charge of production.

Water Vapor Units Compared with Other Systems

(Concluded from Page 15, Column 5)

tic, power consumption drops off with capacity, upon falling loads.

(E) Constant compressing ratio at given intake volume regardless of pressure.

(F) Because of the above mentioned inherent propensities of the equipment to vary capacity and power consumption to balance changing loads, Mr. Hibberd averred that many installations are operating with no automatic controls whatever, yet satisfactory conditions are maintained, and that when automatic controls are used they do not need to

(G) Ease of control and freedom from service due to simplicity.

(H) Exceptionally smooth vibrationless operation because of balance, and absence of reciprocating parts. Because of this characteristic, the speaker said that in one large installation, the equipment now is operating on the 58th floor of an office building adjacent to offices with no sound-proofing between offices and equipment, yet no noise of operation is evident in the offices.

Mr. Hibberd stated that it was necessary to solve many problems before the centrifugal machine was brought to its present state of perfection. He gave as an example the necessity of preventing entrained water from entering the compressor from the evaporator from which the compressor suction is taken directly, because of the serious erosive effect of such entrainment upon the compressor blades at their high rotative speeds.

HIGH OPERATING SPEEDS

Rotative speeds were given as ranging from 7,000 to 9,000 r.p.m. so that speed increases must be employed if the compressor drive is by electric motor. Because of this required high rotative speed, it was explained that the high-speed steam turbine forms an ideal centrifugal compressor drive.

When used with steam turbine drive, the centrifugal compressor was said to be more efficient than the steam jet, especially at low steam pressures, and at reduced air-conditioning loads, and it was explained that chilled water temperatures leaving the evaporator do not rise as much with drop in steam pressure or rise in condenser cooling water temperatures as with the installation where the steam jet is employed.

It was explained that the vacuum pump must first be started and the evaporator and condenser pressure reduced to the normal operating conditions of high vacuum before the centrifugal compressor may be started, as several thousand horsepower would be required.

In comparing the cost of steam jet and centrifugal compressor equipment for the vapor vacuum system, Mr. Hibberd stated the first cost of the compressor to be higher, but operating costs to be lower.

HOW COSTS COMPARE

In comparing costs of centrifugal vapor vacuum equipment with reciprocating Freon refrigerating machines using chilled water circulation to air-conditioning units it was stated that costs of the former were favorable for above 100 tons refrigerating effect in size, but that costs were in favor of reciprocating equipment at smaller capacities, largely because it costs almost as much to build a 50-ton centrifugal compressor as it does to construct a 100-ton unit.

Although either steam jet or centrifugal compressor vapor vacuum equipment was said to be perfectly feasible in small sizes, it was explained by the speaker that for sizes of 50 tons of refrigerating effect and smaller, cost puts vapor vacuum out of the running because of competition with the direct expansion air-conditioning system employing Freon.

Horsepower per ton requirements were said to be about the same for the centrifugal compressor vapor vacuum job as for the Freon job.

In conclusion, Mr. Hibberd said that taking first and operating costs into consideration, the use of steam jet vapor vacuum equipment is advisable for loads in excess of 100 tons refrigerating effect when ample supplies of low-cost steam and condensing cooling water are available, while he declared centrifugal compressor vapor vacuum equipment to be suitable for loads in excess of 100 tons on other projects.

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Frigidaire to Enter General Appliance Field

Ranges, Washing Machines To Be Introduced Soon, Biechler Announces

DAYTON—Frigidaire division of General Motors Corp. will broaden its manufacturing and marketing activity in the near future with entrance into the general appliance field, E. G. Biechler, general manager, announced last Thursday at the annual summer convention of Frigidaire's distributing organization heads.

First appliances to augment the division's domestic and commercial refrigeration equipment will be electric ranges and electric washers, Mr. Biechler said. Complete lines of both products are in the process of development and will go into production in the not too distant future, he said.

Addition of ranges and washers will be the first major change in Frigidaire's line of products since it introduced a line of unit-type air-conditioning equipment for residential and commercial uses.

Frigidaire's executives, engineers, market analysts and sales managers have been working for several years to determine the public's desires for ranges and washers, Mr. Biechler said.

Frigidaire's appliance engineering staffs, consulting engineers and consulting designers have developed the two lines of products, and necessary manufacturing equipment, tools and dies for their manufacture soon will be ordered for installation in the Moraine City plant, which is being enlarged and rearranged in preparation for the manufacture of the new products.

Marketing plans have not been fully developed pending the beginning of production, but indications are that announcements to the organization and the trade will be made late this year.

NRDGA to Discuss Department Store Appliance Sales

CHICAGO—To discuss means for expanding department store sales volume of electric household appliances, the merchandising division of the National Retail Dry Goods Association is holding a special session on the night of June 21 in the Palmer House. The session is included in the association's regular mid-year convention.

Possibilities of kitchen modernizing programs, cooperation with electrical leagues, and department store tie-ins with promotional activities of the electrical industry are to be presented by industry spokesmen.

An open forum is scheduled to stress the present poor profit showing in store appliance departments.

(Concluded on Page 2, Column 1)

Georgia Power Sales Up 58% for 4 Months

ATLANTA—Refrigerator sales of Georgia Power Co. for the first four months of 1937 were 58% above those of a corresponding period last year, unit figures being 3,066 for the four-month period this year, against 1,941 for 1936.

Range sales of the utility for the same period this year were 1,645, against 1,056 for 1936, an increase of 55%. A 33% increase was shown in water heater sales, unit figures jumping from 887 the first four months of last year, to 1,180 for the corresponding period in 1937.

Crosley to Build Cabinet Plant at Richmond, Ind.

CINCINNATI—The Crosley Radio Corp. will build a new refrigerator cabinet factory at Richmond, Ind., Powell Crosley, Jr., president, announced last week. This plant will replace the one destroyed by fire during the January flood.

In making the announcement, Mr. Crosley stated that it is not the intention of the company to curtail any of its activities in Cincinnati. The new plant, he said, is part of the program of the company to add to its production capacity to complete still further its line of household appliances, which now include radios, electric refrigerators, electric washers and ironers, electric heaters, bottle coolers, and Xervacs.

"Selection of the site," Mr. Crosley said, "was made after an exhaustive study of locations in and around Cincinnati. The location at Richmond was chosen because the site in Cincinnati is not adequate for the requirements of this operation, and the site at Richmond was especially well suited for the purpose."

"We are rebuilding on the site of the structure destroyed by fire and will use that building for packing, storing, and shipping the various products made at Cincinnati."

The Richmond plant will be of one-story construction, 1,200 feet

(Concluded on Page 2, Column 2)

Lingo & Pratt New Jobber Directors

DETROIT—Election of two new directors of National Refrigeration Supply Jobbers Association, one representing Texas and the other the West Coast, was announced this week by M. W. Applebee, secretary of the organization.

New director from Texas is D. C. Lingo, president of D. C. Lingo Co., Houston, and Clarence F. (Sandy) Pratt, president of California Refrigerator Co., San Francisco, will represent the West Coast.

Election of the new directors is the result of a mail vote taken April 26 covering an amendment to Article IV of the association's constitution. The move originally had been approved by directors at their April 6 meeting in Chicago.

(Concluded on Page 2, Column 4)

IN THIS ISSUE

Carrier executives discuss current problems in the air-conditioning field, and outline their operating methods. The first of a series of interviews by Air Conditioning Editor F. O. Jordan with major manufacturers. Page 6.

Brockton, Mass. utility company uses trial range plan to increase electric cookery among its low-income customers. Page 11.

A description of a new method of cutting the size and costs of air-conditioning ductwork. Page 15.

One method of air conditioning a general office with several adjacent private offices. By T. H. Mabley. Page 16.

How Oklahoma Gas & Electric Co. promotes air conditioning. Page 18.

Air Conditioning Editor Jordan begins his outline of test data for rating and determining capacities of air-conditioning equipment. "Air Conditioning Made Easy." Page 20.

Principles of heat transfer in air-conditioning coils, particularly the differences in construction between coils for heating and coils for cooling. Page 23.

Apple storage plant construction and refrigeration. Part 2 of C. D. McLaughlin's article, begun last week. Page 24.

Joins Kelvinator



W. F. ARMSTRONG

Armstrong Named Vice President By Kelvinator

DETROIT—W. F. Armstrong, formerly vice president and assistant general manager of the Frigidaire and Delco-Frigidaire divisions of General Motors Corp., has been appointed vice president of Nash-Kelvinator Corp., President George W. Mason announced this week.

Mr. Armstrong has been associated with General Motors Corp. for 25 years, serving in the organization's Delco Remy, Olds Motors, and Frigidaire divisions.

He will assume his duties in Detroit immediately, and will be associated with both automotive and refrigeration divisions.

Australian Manufacturer of Kerosene Units Arrives Home

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NEWS—DETROIT MICH—
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MANY THANKS FOR YOUR
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VISIT STATES KIND REGARDS—
HALLSTROM.

Washington's Proposed Installation Code Opposed by Makers, Retailers & Users

WASHINGTON, D. C.—Opposition to the proposed refrigeration and air conditioning installation and maintenance code for the District of Columbia was voiced by organizations and individuals representing manufacturers, retailers, engineers, and users of refrigeration and air-conditioning equipment, at the first hearing on the proposed ordinance held June 1 here.

Opposition to the code as it is now written centers about the fact that it is unnecessarily prohibitive and restrictive of accepted industry practice, and that it will put installation costs so high that the refrigeration and air-conditioning industry—and the prospective users that would enjoy the benefits of the industry's products—will suffer.

As the hearing opened a number of those present representing various interests took issue with the way the hearing was being handled. Proper notice had not been given to interested parties in time for them to prepare briefs, it was declared, and the limitation of the discussion of the briefs to five minutes was also a target for criticism.

Some of those who voiced their objection to the method of procedure asked that the hearing be postponed.

Capt. P. H. Tansey, assistant engineer commissioner for the District of Columbia, and chairman of the code

Air Conditioning Orders Decline From March

WASHINGTON, D. C.—Orders for air-conditioning systems and equipment booked by 125 manufacturers during April amounted to \$6,538,431, a decrease of 24.9% as compared with the \$8,702,324 booked during March, but almost double the \$3,443,828 reported for April, 1936, according to statistics released by Director William L. Austin of the Bureau of the Census, Department of Commerce.

Included in the air-conditioning systems and equipment report are air conditioning proper (covering unit and central station systems, air washers, filters, and humidifiers), fans, and unit heaters.

For the first four months of the year, orders booked total \$24,947,823.

(Concluded on Page 4, Column 4)

Universal Cooler To Retail Parts Through Jobbers

DETROIT—To meet changing conditions and make it more convenient for service men to obtain factory-made replacement parts for use in field repair work, Universal Cooler Corp. will sell these parts direct to service men through authorized refrigeration supply jobbers, H. L. Morrison, service manager, announced this week.

Universal Cooler is the second company in the industry to adopt the refrigeration supply jobber method of supplying "genuine" replacement parts to independent service men, Kelvinator having announced a similar policy earlier in the year. (AIR CONDITIONING AND REFRIGERATION NEWS, March 24.)

New parts distribution policy, said Mr. Morrison, is expected to work to the advantage of the company as well as jobbers and independent service men. Universal Cooler for years has used the direct-to-dealer method of distribution of products manufactured under its own name, as well as those made under other trade names for other concerns.

(Concluded on Page 2, Column 5)

363,570 April Sales Set New Mark for Month

45,623 Commercial Unit Sales Set All-Time Record in April

DETROIT—Reaching a figure second only to the all-time record set in March, world manufacturer-to-distributor sales of household electric refrigerators totaled 363,570 units in April, according to estimates by AIR CONDITIONING AND REFRIGERATION NEWS.

Although 16,530 units below the all-time mark established by March sales of 380,100 units, April household sales were 42,270 over the 321,300 units sold during April of 1936.

Sales of commercial refrigerating equipment to distributors by members of the commercial section of National Electrical Manufacturers Association broke the all-time monthly record, set in March, with an April mark of 45,623 units. The March total was 36,166 units.

Just how marked has been the rise in household refrigerator sales the past year is indicated by the fact that the 300,000 mark for a month was reached for the first time during March of last year. Sales during April, the following month, were 321,300 units, and the year's high mark was set in May, when sales reached 344,200 units.

Both March and April totals have bested 1936's best monthly record, the former by 35,900 and the latter by 19,370.

Sales during the month by 15 Nema member companies were reported at

(Concluded on Page 4, Column 5)

Newill and Schweller In New Positions At Frigidaire

DAYTON—Promotion of E. B. Newill, chief engineer and director of research of Frigidaire division, General Motors Corp., to assistant general manager, and S. M. Schweller, assistant chief engineer to chief engineer and director of research, was announced last Thursday by E. G. Biechler.

Mr. Newill also becomes assistant general manager of the Frigidaire and Delco-Frigidaire conditioning divisions of General Motors Sales Corp., which market the refrigerating and air-conditioning equipment manufactured by Frigidaire and Delco appliance divisions.

Elevation of Mr. Newill to general management rank marks the ascendancy of a man of the research type of mind who has broadened his knowledge to include experience in the problems of production, sales, and other phases of a large manufacturing and marketing organization.

Born in Atlanta, Ga., on Feb. 6, 1895, Frigidaire's new assistant general manager was schooled in the

(Concluded on Page 2, Column 3)

Three Appointments Made At Universal Cooler

DETROIT—In a series of personnel changes at Universal Cooler Corp., O. Eastman has been appointed advertising manager, George A. Moister, sales promotion manager, and O. J. Kesti, assistant domestic sales manager.

Mr. Eastman comes to Universal Cooler from Kelvinator, where for the past three years he was copy chief. Prior to that, he was assistant advertising and sales promotion manager of the old Copeland Refrigeration Co.

(Concluded on Page 2, Column 5)

Appliance Merchandising Spotlighted at Retail Dry Goods Meeting

(Concluded from Page 1, Column 1) formulate possible steps to overcome it, settle the differences over installment terms, determine the most beneficial locations for appliance departments, and discuss servicing of appliances and related subjects.

Speakers at the special merchandising meeting and their topics are: George E. Whitwell, chairman of the National Kitchen Modernizing Bureau and vice president in charge of sales of the Philadelphia Electric Co.—"The kitchen modernizing program and its significance to department stores."

J. S. Bartlett, president of the Electrical League of Washington, D. C.—"The importance of electrical leagues to department stores."

P. B. Zimmerman, general manager of appliance sales, General Electric Co., and member of the committee on business developments of the National Electrical Manufacturers' Association—"The department store's place in the promotional activities of the electrical industry."

Discussion leader for the open forum is Thomas P. McGee of the major appliance department of Ed. Schuster & Co., Milwaukee. Questions to be considered are:

What's wrong with the profit showing in major appliance departments?

a. Are operating and selling expenses too high?

b. Is it the overhead expense that is too high?

c. Is the markup sufficient?

Are installment selling terms too severe in department stores for competition with furniture and other dealers?

What is the best method of compensating floor salesmen and outside men?

What are the qualifications of a good outside salesman?

How can department stores and utilities cooperate to mutual advantage?

What is a reasonable percentage to spend for servicing of appliances?

H. Lutes, divisional merchandise manager of the J. L. Hudson Co., leading department store in Detroit, is chairman of the special session.

New Plant for Crosley At Richmond, Ind.

(Concluded from Page 1, Column 2)

long by 200 feet wide, and will be located on a site of approximately 100 acres northwest of the city, between the Pennsylvania and the C. & O. railways, lying north of the Belden manufacturing plant. The site, it was reported, will become the property of Crosley after a substantial sum has been paid as payroll to the workers.

Lewis M. Crosley, vice president and general manager of Crosley, said work on the ground will be started at once, and active construction of the building will start by Aug. 1 to be completed by Dec. 1.

Promoted by Frigidaire



S. M. SCHWELLER
New Frigidaire chief engineer
and director of research.



E. B. NEWILL
Assistant general manager of
Frigidaire.

Newill Appointed Asst. General Manager of Frigidaire; Schweller New Chief Engineer

(Concluded from Page 1, Column 5) South, being graduated from the Georgia Institute of Technology in 1915 with degrees in both mechanical and electrical engineering.

Immediately upon leaving school, Mr. Newill entered the employ of Westinghouse Electric & Mfg. Co. at East Pittsburgh, under famed B. G.

Lamme, chief engineer. From 1915 to 1929, he was active in the development of automotive electrical equipment.

In 1929, he became associated with General Motors Corp. as vice president in charge of engineering of General Motors Radio Corp., a position he held until June, 1930, when he was promoted to chief engineer of Frigidaire and placed in charge of the Frigidaire engineering and research laboratories on Taylor St.

Mr. Schweller was born on Dec. 30, 1894, in Mariastein, Ohio, and came to Dayton in his early teens. He went through Dayton grade school and began work as a core-maker for the Dayton Mfg. Co., continuing his educational activity as a night student.

In 1913, he became an employee in the machine room of the National Cash Register Co. In 1916, he joined Delco as a draftsman, later becoming a designer. In 1921, he became a member of the designing staff of the Delco-Light Co., and in May, 1925, he was made general foreman in charge of all Frigidaire assembly operations.

This was followed in 1926 by promotion to assistant superintendent and in 1927 promotion to superintendent of the Taylor St. plant. In the fall of 1928, he was made assistant chief engineer in charge of product development, a department which was later broken down into household, commercial, and air-conditioning sections with Mr. Schweller in charge of household development.

In 1934, he again became assistant chief engineer, the place he relinquishes to take over the top post.

New Directors Named by Jobber Association

(Concluded from Page 1, Column 2)

Directors of the jobber association, in addition to Mr. Lingo and Mr. Pratt, are: Irving Alter, Harry Alter Co., Chicago; M. W. Applebee, Burstein-Applebee Co., Kansas City; H. W. Blythe, H. W. Blythe Co., Chicago; L. H. Gorton, Machine Tool & Supply Co., Tulsa; C. A. Kabat, Paramount Electric Supply Co., New York City; H. S. McCloud, Williams & Co., Pittsburgh; H. W. Merkel, Merkel Bros. Co., Cincinnati; J. M. Ober, J. M. Ober, Inc., Detroit; and R. H. Spangler, The Spangler Co., St. Louis.

Mich. Commission Studies Kooler-Keg Beer Cooling Setup

LANSING, Mich.—The Michigan Liquor Control Commission at a recent hearing here discussed the possibilities of monopoly and violation of the commission's code which may be inherent in the Kooler-Keg system for cooling beer, manufactured and leased by the Novadel-Agene Corp. of Newark.

In the Kooler-Keg system the beer is cooled by means of coils placed in the keg, chilled water being circulated through the coils. This type of cooling naturally calls for a tie-up with the brewer.

Installation is on a leasing system. The retailer pays \$31.50 a month for the first year and \$28 a month thereafter, while the brewer pays \$5 a keg the first year and \$1 a keg thereafter.

Three Detroit breweries have subscribed to the service and invested \$5 a keg for the opportunity of selling their beer to retailers who have installed Kooler-Keg systems.

Other brewers have asked the commission to decide whether they are being asked to help retailers finance equipment installation indirectly, which would be a violation of the commission's rule that brewers cannot finance retailers' equipment.

Commission members raised the question of whether or not the leasing system might develop exclusive contracts between brewers and retailers.

Another question that was raised was the possibility of the rental charges being advanced in the future.

John Shea, head of the Brewery and Alcohol Division; Raymond Hafeli, Detroit commission manager; and a committee representing the brewery trade are preparing a report for the commission on the subject.

Universal Cooler to Sell Parts through Jobbers

(Concluded from Page 1, Column 4)

Service on the units in the field has been for the most part through independent service men, and the handling of replacement parts through jobbers will make it easier for service men to make quick repairs on customers' refrigerators, it was pointed out.

Authorized jobbers will be kept informed of all engineering releases applying to service parts, and will be given information regarding the handling of service parts, as well as the trade names under which Universal Cooler products have been and are now being sold, Mr. Morrison said.

Eastman Made Universal Cooler Advertising Chief

(Concluded from Page 1, Column 5) erator Co., and advertising manager of the Silent Automatic Co.

His experience in the refrigeration industry began in 1927, when he became associated with Kelvinator Corp.

Appointment of Mr. Moister, for the past two years advertising director of the company, as sales promotion manager was announced by H. A. D'Arcy, domestic sales manager. In his new position, Mr. Moister will devote considerable time to dealer contact work.

Mr. Kesti, a member of Universal Cooler's sales department for the past nine years and more recently manager of the sales order department, will assist Mr. D'Arcy in handling household refrigeration sales problems.

A Prominent Manufacturer

of air conditioning equipment—domestic and commercial—needs ONE new outlet.

This outlet, national in scope and with a country-wide sales force, must now be established in the home appliance or commercial refrigeration field. It must be a distributor with an established name in buying markets and with the proper facilities to undertake the sale of this manufacturer's entire production.

In return, such a distributor will receive a national franchise covering competitively priced air conditioning equipment backed by 25 years of industrial leadership.

The successful application of air conditioning units now in operation from coast to coast fully establishes the ability of this manufacturer to produce air conditioning equipment accurate in design and construction.

Inquiries are invited from national organizations now developing their sales programs for 1938.

★
Box 935

Air Conditioning and Refrigeration News

5229 Cass Ave., Detroit, Michigan



TAG POCKET THERMOMETERS

The practical design and extreme precision of TAG Pocket Thermometers are reflected in the great number of these instruments which are carried by alert servicemen. They are available in mercury or spirit-filled, with ranges of -30 to +120°F., +30 to +120°F., or 0 to 220°F., 6" in length. Send for prices and a copy of the TAG Control and Test Equipment Catalog No. 1136-25.

ASK YOUR JOBBER ABOUT TAG POCKET THERMOMETERS AND CONTROLS.

C. J. TAGLIABUE MFG. CO.

Park & Nostrand Ave's., Brooklyn, N. Y.

You'll make
more money
with
C. I. T.

C. I. T. BUSINESS BUILDER

The localized
national
finance
service

JUNE

Prepared by C. I. T. Corporation, unit of Commercial Investment Trust Corporation, capital and surplus over \$100,000,000

1937

Let Buyers Know That You Offer C.I.T. Budget Plan ...Dealers Everywhere Find It Strong Selling Point

Featuring of Display Cards is Paying Dividends to Retailers
—Why Don't You Cash In on C.I.T.'s Consumer Popularity?



C.I.T. Consumer Advertising

Full-page advertisements in The Saturday Evening Post, Collier's and Time, designed to promote "consumer good-will," keep the name of C.I.T. before your customers. Through national advertising, C.I.T. is becoming a household synonym for reliable sales financing.

Dealer Praises Limited Recourse as Sales Booster

The following is an excerpt from a dealer's letter. It is typical of the spontaneous praise that comes to us from pleased dealers all over the country. He writes:

"We herewith enclose contract on above mentioned party endorsed by us on the Limited Recourse Plan. . . P.S. You will have noted that our appliance business is much greater than last year. Your Budget Plan and the Limited Recourse Plan, and quick service deserve our recommendations."

How Limited Recourse Helps You

One of the outstanding recent developments in appliance financing is the Limited Recourse Retail Finance Plan offered through C.I.T. for your benefit. Under this plan the dealer's endorsement of paper becomes without recourse after the purchaser has paid C.I.T. the first four monthly instalments. Yet it operates without cost to you.

With Limited Recourse, dealers may do a larger volume of business on the same capital, adding to their capital while reducing their liabilities. There is no hold-back to tie up part of your profit. You receive 100% cash at once. Your capital remains fluid; your current assets increase and are not frozen beyond immediate reach. Ask your C.I.T. branch for complete details.

C.I.T. Has Strong "Dealer Appeal"

The dealer finds it good business to deal with C.I.T. The "open and above board" rate structure which pleases the public makes it easier for the retailer, too. Another advantage is the approval of many new appliances for financing. At present C.I.T. dealers may finance radios, refrigerators, automatic heating equipment, ranges, electric washers, ironing machines, water heaters, dish washers, commercial refrigeration, air conditioning units, room coolers, and other appliances under a uniform schedule of rates.

THE red C. I. T. display card with the white lettering is a familiar sight in thousands of store windows. The simple statement on the card: "The C.I.T. Budget Plan Protects the Time Buyer" is being read by millions of people in all parts of the country. Why dealers are giving this display material prominence is easy to explain. The name of C. I. T. is a drawing card to prospective buyers.

The C.I.T. poster is available with an easel back for counter use, with adhesive front for inside of window, and in miniature size as a window or product sticker or for various uses. Door handle cards of similar design—as shown below—can be actually attached to the appliance. These are all ready to go to work, and can be secured from your local C.I.T. office if a sufficient supply has not already been received. To innumerable retailers they represent an easy method to boost sales because the name of C.I.T. has proved to have "sales appeal."

Why C.I.T. is Popular with the Consumer

C.I.T. was established long before instalment buying had obtained general acceptance. For nearly 30

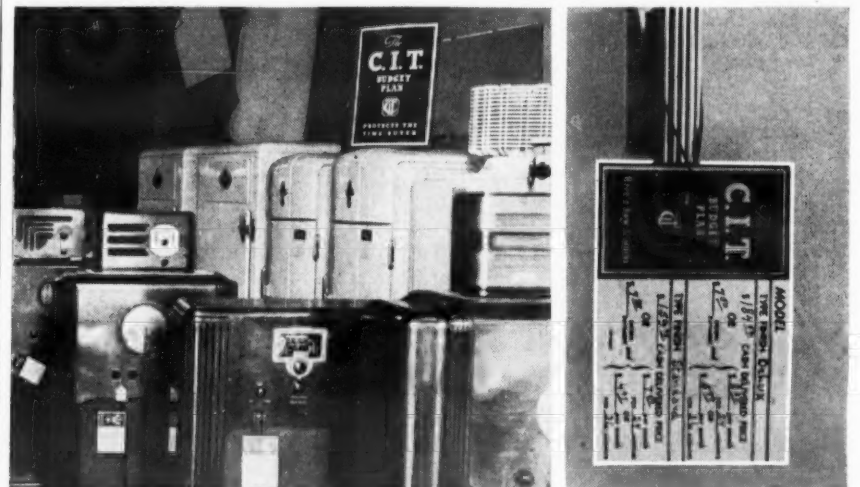
years C.I.T. has shared in this form of social progress. Today, wisely administered instalment purchasing is recognized widely by economists and bankers as sound and beneficial.

Cooperation with Dealer

There is a growing tendency by dealers everywhere to make time-selling one of their principal features. More and more they are discovering that the name of C.I.T. attracts new business and are featuring it accordingly. By means of tactful, friendly service C.I.T. cooperates with the dealer in keeping the good-will of the customer.

Rapid, Efficient Credit Investigation

It is the dealer, rather than the Finance Company, who is held responsible if the investigation is made in such a way as to embarrass the prospective buyer. C.I.T. has developed a technique by which the facts about a buyer's financial standing are gathered rapidly and with quiet good taste. This is the result of many years of experience by C.I.T. in investigating the credit of time buyers throughout the country. Grateful letters from dealers in all parts of the country testify to their appreciation of this part of C.I.T. service.



Inside stores the country over, the familiar C.I.T. placard greets the buyer with its assurance of the best in time-buying service. The refrigerator door handle card illustrated above (at right) provides space for showing the prospective buyer prices, monthly instalments and terms under the C.I.T. Budget Plan.



The Philosophy of
DEALER DAN

One of my customers said to me the other day, "I don't want the whole neighborhood to know I'm thinking of buying a refrigerator." I assured him that C.I.T. credit investigators were as tactful as they were efficient.

I saw something about a dentist in Boston who is employing a hypnotist to free his patients from pain. Someone suggested the hypnotist try his skill when it came to collecting the bill! Hypnotists aren't generally needed for collecting overdue instalment payments, but trained collectors are. C.I.T. seems to be able to extract painless payments.

C. I. T. Floor Plan enables You to Show All Models

The C.I.T. Floor Plan enables you to stock a complete line of refrigerators—as well as ranges, electric washers, room coolers, oil burners and stokers—at an investment of a fraction of the total wholesale cost. Ask your distributor or C.I.T. local office about the Floor Plan.

HOW DEALER SMITH SOLVED THE MYSTERY OF LAGGING SALES—by Westcott

HOW MUCH IS THIS MODEL?
IT SELLS FOR \$163.00

I'LL THINK IT OVER—THANK YOU FOR YOUR TROUBLE
(THAT'S WHAT THEY ALWAYS SAY)
GOOD DAY, MR. GREEN. I HOPE TO HEAR FROM YOU

C.I.T.? I DON'T THINK YOUR BUDGET PLAN IS BOOSTING MY SALES—NO ONE SEEMS TO ASK FOR IT
ASK FOR IT! EVER TRY TELLING 'EM ABOUT IT? I'M COMING RIGHT OVER, SMITH

YOU MEAN I SHOULD TELL CUSTOMERS RIGHT AT THE START ABOUT C.I.T.'S BUDGET PLAN?
EXACTLY. WHEN PEOPLE ASK HOW MUCH THEY ARE REALLY THINKING HOW CAN I PAY FOR IT?

SO IT WILL COST YOU \$7.00 A MONTH OVER A 24-MONTH PERIOD ON THE C.I.T. BUDGET PLAN
SPLendid! I'LL TAKE IT—THE C.I.T. PLAN SOLVES MY PROBLEM

Smith Talking To You, Mr. Reader
"So gentlemen, C.I.T. solved my problems . . . I couldn't understand why sales were at a standstill. It seemed foolish to tell a customer about the Budget Plan until I found out if he intended to pay cash. Now I know that the cash buyer will pay cash anyhow—and many a hesitant customer is sold by C.I.T.'s Budget Plan. My sales are booming now!"

LATER

C. I. T. CORPORATION • NEW YORK • CHICAGO • SAN FRANCISCO

SALES FIGURES

Sales of Household Refrigerators by Nema Members Total 338,214 For Month of April

The following 15 member companies of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) reported household refrigerator sales for April, 1937: Apex Electrical Mfg. Co., Crosley Radio Corp., Fairbanks, Morse & Co., Frigidaire Corp., General Electric Co., Gibson Electric Refrigeration Co., Kelvinator Corp., Leonard Refrigerator Co., Norge Corp., Servel, Inc. (export only), Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow Mfg. Co., Uni-

versal Cooler Corp., and Westinghouse Electric & Mfg. Co. Member companies not reporting included: Jomoco, Inc., Merchant & Evans Co., and Sparks Withington Co. The sales of the reporting companies do, however, include units manufactured for the following concerns: Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp., and Sears, Roebuck & Co.

SALES FOR APRIL, 1937					
Domestic		Canadian		Other Foreign	
Quantity	Value	Quantity	Value	Quantity	Value
Lacquer (Exterior) Cabinets Complete					
1. Chest	2,212	\$ 103,961	5	\$ 243	\$ 9,798
2. Less than 3 cu. ft.	28	1,688			
3. 3 to 3.99 cu. ft.	7,107	441,074	84	5,143	4,762
4. 4 to 4.99 cu. ft.	37,196	2,580,609	1,853	126,160	6,613
5. 5 to 5.99 cu. ft.	103,353	8,050,626	1,722	144,643	3,774
6. 6 to 6.99 cu. ft.	80,922	7,385,500	945	88,400	1,832
7. 7 to 7.99 cu. ft.	26,360	2,736,468	258	26,072	1,093
8. 8 to 8.99 cu. ft.	8,582	934,342	18	2,003	198
9. 9 to 12.99 cu. ft.	300	37,980			
10. 13 cu. ft. and up	4	956			
11. Total Lacquer	266,464	22,273,204	4,885	392,664	18,469
Porcelain (Exterior) Cabinets Complete					
12. Up to 4.99 cu. ft.	999	76,239	44	3,479	118
13. 5 to 5.99 cu. ft.	8,191	738,312	184	16,999	290
14. 6 to 6.99 cu. ft.	19,001	1,891,571	100	10,359	189
15. 7 to 7.99 cu. ft.	4,407	736,687	49	5,714	135
16. 8 to 8.99 cu. ft.	6,076	775,637	23	3,012	138
17. 9 to 12.99 cu. ft.	665	132,795	2	397	12
18. 13 cu. ft. and up	353	64,706	4	699	80
19. Total Porcelain	41,692	4,415,947	406	40,659	962
20. Total—Lines 11 and 19	308,156	26,689,151	5,291	433,323	19,431
21. Separate Systems					
1/4 Hp. or Less	238*	14,754*	479	15,927	1,105
22. Separate Household Evaporators	3,851	30,561	55	797	84
23. Total—Lines 20, 21, 22	311,769		5,825		20,620
24. Condensing Units					
1/4 Hp. or Less	1,864	101,705	45	3,076	572
25. Cabinets—No Systems	1,760	52,109		302	9,227
26. Total Household		\$26,858,772		\$453,123	\$1,586,135

*Includes sales and credits reported by more than one company.

April Sales of Air Conditioning Equipment Reach \$6,538,431, Almost Double April, 1936

Item	Value of Orders Booked		
	April, 1937	April, 1936	Total, 4 Mos. Jan.-April, 1937
Total	\$6,538,431	\$3,443,828	\$24,947,823
Air-Conditioning Group—Total	\$3,779,544	\$1,758,211	\$14,968,979
Unit Systems—			
Self-contained (shipped substantially complete)	739,433	119,685	2,544,710
Not self-contained (shipped in sections, including refrigerating or cooling medium, if installed)	961,899	561,220	3,839,233
Central-Station Systems, excluding installations if installed—			
Human comfort (including refrigerating or cooling medium sold separately or otherwise for air conditioning)*	1,234,131	487,764	5,646,074
Industrial (including refrigerating or cooling medium sold separately or otherwise for air conditioning)*	94,742	93,632	343,495
Refrigerating or cooling medium sold to contractors or other distributing outlets (not manufacturing air-conditioning equipment) for air-conditioning systems, when such knowledge as to the application is available	426,035	323,334	1,463,660
Air washers, including pumps and motors and control where furnished	109,642	79,767	368,633
Air filters (not including sales of filters used with machinery other than fans)	53,388	25,288	125,919
Humidifiers	160,274	67,521	657,255
Fan Group—Total	\$1,857,280	\$1,109,846	\$ 6,423,424
Fans, including bearings, pulleys or coupling (if furnished)			
For public and semi-public buildings	287,135	195,756	751,956
For general industrial uses	535,211	314,621	2,130,027
For mechanical draft	228,738	113,334	1,039,723
For jobber stocks and unknown uses	130,719	61,013	442,106
Small housed and propeller fans—			
Direct connected small housed blowers with motors and control (merchandise motors)	157,835	105,991	582,431
Propeller fans, direct connected and belted (for ventilation only)	322,442	227,298	989,984
Driving mechanism for general fan use (not reported above)—			
Electric motors and controllers (manufactured or jobbed)	176,566	84,274	400,028
Steam engines (manufactured or jobbed)	18,634	7,559	87,169
Steam turbines (manufactured or jobbed)			
Unit Heater Group—Total	\$ 901,607	\$ 575,771	\$ 3,535,420
Industrial Type Unit Heaters, including heating element and motors where furnished—			
Equipped with blower-type (centrifugal) fans	154,915	49,876	562,325
Equipped with propeller-type fans	274,163	161,105	1,230,469
School Room Type Unit Heaters, including heating element and motors and control where furnished	77,465	190,302	516,451
Indirect Heating Surface (not including unit heater surface)—			
Steel pipe coil type (manufactured or jobbed)	4,307	13,532	20,471
Cast iron type (manufactured or jobbed)			44,776
Copper or aluminum type (manufactured or jobbed)	390,857	160,956	1,160,928

*Includes incidental equipment, such as temperature, motor, humidity, and electrical controls, dampers, outlets, etc., as are sold with each.

45,623 Commercial Sales Is World Total For 15 Manufacturers in April

The following report of commercial refrigerating and air-conditioning equipment sales for April, 1937, were made to the Commercial Refrigeration Section of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) by the following 15 companies:

Brunner Manufacturing Co., Carrier Engineering Corp., Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigeration Corp., Kelvinator Corp., Leonard Refrigerator Co., Merchant & Evans Co., Norge Corp., Servel, Inc., Uniflow Manufacturing Co., Universal Cooler Corp., Westinghouse Electric & Manufacturing Co., York Ice Machinery Corp.

	Domestic		Canadian		Other Foreign		Total World	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1. Bottle Water Coolers—Complete	1,241	\$ 73,532	3	\$ 160	66	\$ 4,770	1,310	\$ 78,462
2. Pressure Water Coolers—Complete	3,988	374,173	20	1,859	92	10,008	1,310	89,088
3. Water Coolers—Low Side Only	239	17,505	2	119	5	272	246	17,886
4. Ice Cream Cabinets—Complete	6,442	1,026,030	112	13,662	193	28,935	6,747	1,068,627
5. Ice Cream Holding Cab. Only (Remote)	877	125,848	7	835	10	1,720	894	128,408
6. Bottled Beverage Coolers—Complete	8,360	720,477	44	3,391	210	16,828	8,614	740,696
7. Milk Cooling Cabinets (No High Sides)	287	15,272	1	235	29	2,308	266	17,490
8. Air Conditioners—Self-Contained	905	206,261	1	235	818	75,353	1,224	281,849
9. Air Conditioners—Floor Type (No High Sides)	427	157,691			56	11,173	483	168,864
10. Air Conditioners—Ceiling (Cooling Only—No High Sides)	625	92,900			48	5,928	673	98,828
11. Air Conditioners—Ceiling Type (Equipped for Heating—No High Sides)	89	49,706	1	530	7	3,710	97	53,946
12. Air Conditioners—Residential Type (No High Sides, Boilers, or Furnaces)	45	6,696			3	1,500	48	8,196
13. Condensing Units Less Than 1/2 Hp.	5,188	297,912	17	658	2,599	161,557	7,804	460,127
14. Condensing Units—1/2 Hp.	4,560	347,593	100	7,389	867	71,655	5,527	426,637
15. Condensing Units—3/4 Hp.	2,496	259,476	60	6,672	507	54,512	3,063	320,669
16. Condensing Units—1 Hp.	1,613	217,516	39	5,248	210	30,096	1,862	232,869
17. Condensing Units—1 1/2 Hp.	1,219	185,857	25	4,306	227	39,970	1,471	230,133
18. Condensing Units—2 Hp.	994	185,097	6	1,076	81	17,233	1,021	203,406
19. Condensing Units—3 Hp.	342	77,852	1	121	1,149	29,340	1,492	107,313
20. Condensing Units—5 Hp.	260	77,453	3	621	80	18,682	943	96,756
21. Condensing Units—7 1/2 Hp.	383	97,753			5	2,331	388	100,084
22. Condensing Units—10 Hp.	135	88,915			7	3,999	142	92,914
23. Condensing Units—15 Hp.	151	115,244			4	3,023	155	118,267
24. Condensing Units—20 Hp.	111	99,249			17	15,672	128	114,921
25. Condensing Units—25 Hp.	100	118,135			3	3,441	103	121,626
26. Condensing Units—30 Hp.	62	80,672					62	80,672
27. Condensing Units—40 Hp.	21	43,801					21	43,801
28. Condensing Units—50 Hp.	14	23,579			10	16,000	24	38,579
29. Condensing Units—60 Hp.	12	24,498					12	24,498
30. Total Lines 13 to 29 Inclusive	17,611	2,340,652	251	26,091	5,766	467,511	23,628	2,834,264
31. Total Lines 1, 2, 4, 6, 8, and 30	38,547		431		6,645		45,623	
32. Commercial Evaporators (Not Reported Above)	5,639	170,837	275	7,575	955	28,841	6,869	207,253
33. Air-Conditioning Evaporators (Not Reported Above)	492	138,692			9	8,415	501	147,107
34. Total Commercial & Air Conditioning		\$5,516,272		\$54,457		\$667,170		\$6,237,899

N. Y., Pennsylvania, Illinois Head Sales By States for April

States and Territories	Quantity of Household Low Sides
Alabama	3,474
Arizona	1,222
Arkansas	2,439
California	16,299
Colorado	1,829
Connecticut	4,292
Delaware	487
District of Columbia	2,877
Florida	2,301
Georgia	6,264
Idaho	1,175
Illinois	24,531
Indiana	8,807
Iowa	4,653
Kansas	4,037
Kentucky	5,068
Louisiana	3,813
Maine	1,066
Maryland	3,398
Massachusetts	11,087
Michigan	15,951
Minnesota	6,511
Mississippi	2,388
Missouri	8,781
Montana	804
Nebraska	2,420
Nevada	268
New Hampshire	841
New Jersey	13,127
New Mexico	759
New York	33,740
North Carolina	8,500
North Dakota	650
Ohio	22,941
Oklahoma	3,880
Oregon	1,440
Pennsylvania	33,169
Rhode Island	1,535
South Carolina	3,973
South Dakota	609
Tennessee	6,034
Texas	13,616
Utah	1,258
Vermont	521
Virginia	5,724
Washington	2,700
West Virginia	4,471
Wisconsin	5,311
Wyoming	398
Total United States	311,769
Canada	5,825
Other Foreign (Including U. S. Possessions)	20,620
Total for World	338,214

Central Station Orders Nearly Triple Total For April, 1936

(Concluded from Page 1, Column 4) of which \$14,988,979 is for air-conditioning equipment proper, \$6,423,424 for fans, and \$3,535,420 for unit heaters.

Orders booked during April in the air-conditioning group only totaled \$3,779,544, compared with \$5,815,317 during March. The month's total, however, more than doubled the \$1,758,211 reported for April, 1936.

Unit air-conditioning systems of the self-contained type totaled \$739,433 in orders during the month; systems not self-contained totaled \$961,899. Comparative figures for the same month in 1936 were \$119,685, for self-contained units, and \$561,220 for systems of the other type.

Central station systems for human comfort showed orders totaling \$1,234,131 during the month, compared with an April, 1936 mark of \$487,764. Industrial system orders totaled \$94,742, against \$93,632 in April of last year.

Orders for refrigerating or cooling mediums sold to contractors for separate installation totaled \$426,035, compared with a mark of \$323,334 in April, 1936.

Air washer orders during the month reached \$109,643, against an April, 1936 total of \$79,767; air filter orders were \$53,388, compared with \$25,288 in April last year; and humidifier orders totaled \$160,274, compared with an April, 1936 figure of \$67,521.

Orders in the fan group totaled \$1,857,280 during the month, compared with a 1936 total of \$1,109,846; and unit heater orders were \$901,607, against a \$575,771 figure for the same month last year.

20,620 Household Units Exported by Nema Members in April

(Concluded from Page 1, Column 5) 338,124 units, of which 311,769 were to distributors in the United States and 20,620 to distributors in foreign countries other than Canada.

The record-breaking course of commercial sales is also indicated by comparison with last year's totals for comparative months. In April of 1936, commercial sales totaled 27,299 units, and the year's high mark, 35,613 units, was established in May. Both March and April sales this year have surpassed last year's best effort, April, by more than 18,300 units.

Commercial equipment sales for April included 1,224 self-contained air conditioners, 8,614 bottled beverage coolers, 4,100 pressure type water coolers, and 6,747 ice cream cabinets complete.

In the household refrigerator sales by states, New York led with 33,740 units during the month. Pennsylvania was a close second, with 33,169; Illinois was third, with 24,531; and Ohio was fourth, with 22,941. California sales during the month were 16,299 units.

CONDENSERS
DOMESTIC EVAPORATORS
COMMERCIAL EVAPORATORS
AIR CONDITIONING SURFACE

McCord

REFRIGERATION AND
AIR CONDITIONING
Products

BLAST HEATING SURFACE
COMFORT COOLERS
MARKET COOLERS
UNIT HEATERS

CATALOGUE ON REQUEST

McCord Radiator & Mfg. Co.
DETROIT, MICHIGAN

WOLVERINE

Dehydrated-Deoxidized

For Refrigeration or Air Conditioning. The dependable tubing for your jobs... easy to work... clean... uniform. Available in a complete range of sizes.

Your jobber has it.

WOLVERINE TUBE COMPANY

1411 CENTRAL AVE. DETROIT, MICH.

Refrigerators Need NEW DOOR GASKETS

★ You never lack prospects for door gasket replacements. Today, right in your own community, one out of every four refrigerators is in need of this service—a service that you can supply at a profit.

Get in on the ground floor of this new and profitable business. Miller will relieve you of all product problems. From their simplified line of 20 gasket types, you can service 80% of all refrigerators, regardless of make.

The market is ready and waiting. It is your next move. Send for illustrated price list. If not obtainable through your local jobber, write direct.

THE MILLER RUBBER COMPANY, INC.
Akron, Ohio

IMMEDIATE DELIVERY

Miller

"Engineers in Rubber"

LOOKS LIKE EVERYBODY WANTS A G-E TRIPLE-THRIFT REFRIGERATOR

IT'S THE HOTTEST LINE OF THE YEAR!



AMERICA'S BUYING ONE-A-MINUTE!

Every minute of every day somebody buys a General Electric Triple-Thrift Refrigerator. Retailers everywhere are calling it the hottest line in refrigeration!

The General Electric Refrigerator's 3-way savings—on price, on current, on upkeep . . . and its advanced *Oil Cooling* feature of the sealed-in-steel Thrift Unit . . . have generated an unprecedented buying wave among today's refrigerator shoppers. Looks like all America is going G-E this year!

A Parade of Profits!

Every sale of a General Electric Triple-Thrift Refrigerator starts a *parade of profits* for the G-E retailer. Every buyer is a potential customer for other General Electric home appliances—and General Electric retailers can offer a complete line. General Electric Company, Specialty Appliance Sales Division, Section DF6, Nela Park, Cleveland, Ohio.

The One COMPLETE Line of Electrical Home Appliances

Refrigerators, Ranges, Dishwashers, Garbage Disposals, Complete Electric Sinks, Unit Kitchens, Washing Machines, Ironers, Vacuum Cleaners, Radios. Also Water Coolers, Beverage Coolers and Commercial Refrigeration Equipment for every purpose.



GENERAL ELECTRIC



Design & Merchandising Methods Used by Carrier Corp. Revealed In Interviews with Executives

BY F. O. JORDAN

This is the first of a series of interviews by Air Conditioning Editor F. O. Jordan with major executives of air-conditioning manufacturing companies, in which they discuss current problems in the industry, as they see them, and outline methods of operation.

NEWARK—When asked about the problems confronting the air-conditioning industry, L. R. Boulware, vice president and general manager of the Carrier Corp., straightened up at his desk in his air-conditioned private office and declared without hesitation that air conditioning's most serious and defiant problem is to induce the public to "keep its feet on the good solid ground of the present," and not go into a mesmeric and non-buying trance induced by vague hopes of the future.

"Such general public acceptance as air conditioning now enjoys may appear to be a wonderful thing for a baby industry," the Carrier general manager admitted, but at the same time declared that such admitted "public acceptance and interest is far in advance of public readiness to buy."

DELUSIONS ON COST

Mr. Boulware explained this great and disconcerting lag of "buying-mindedness" behind "air-conditioning mindedness" by saying that people seem to have some sort of delusion that great reductions in consumer cost of air conditioning are imminent, due to the cheapening effect of mass production methods, and/or to rumored simplification of air-conditioning equipment soon to be made.

"The 'parlor' variety of air-conditioning engineer," said Mr. Boulware, "delights in telling how he is going to buy air conditioning for his home as soon as the magic of mass production cuts the cost of air conditioning just like it reduced automobile costs, and as soon as that new cycle of air conditioning about which he has been reading is perfected so that all you have to do to cool your house off is to light a gas jet in the basement."

However, Mr. Boulware explained

that it will be a long wait for accelerated production to effect much of a reduction in air-conditioning costs, because most of the cost in fabricated air-conditioning equipment is not labor costs which can be materially reduced by improved production volume and methods, but is composed principally of material costs, which are reduced but little by improved production.

CONDITIONING NOT NEW

As to the probabilities of any great reduction in air-conditioning costs to the consumer to result from new scientific discoveries, principles, or refrigeration cycles it was pointed out that contrary to popular belief, air conditioning is not a new development just in process of discovery. Although it only has recently stepped into the klieglights of general public interest and acceptance, air conditioning as an established industry is more than 20 years old, and it is based upon refrigeration principles which have stood unchanged for much longer.

"For these reasons," contended Mr. Boulware, "it is a case of buying your comfort machine now, or like those people who do not live right, prepare to be hot and uncomfortable for a long time."

That air conditioning is here right now is impressed upon the mid-summer visitor to the Carrier establishment, for unlike the shoemaker's children who have no shoes, just about all of this New Jersey home of air conditioning seems to be air conditioned except the watchman's shanty.

PLANT SETUP

In the Frelinghuysen Ave. plant are housed executive, board, sales, engineering, research, and dealer engineering offices and departments, as well as the bulk of production. In addition to this plant are others where production of certain types of equipment is carried on.

It is in the Newark plant where the great growth of the Carrier organization and its development of air conditioning has taken place, and here today are actively asso-

ciated five of the original seven founders of the present company, namely Messrs. Carrier, Lyle, Lewis, Murphy, and Heckel.

For the purposes of administration, the Carrier organization is divided into the departments of Engineering, Production, Sales, Installation, and Service.

DEALER ORGANIZATION

Carrier dealers are required to organize upon the same basis as the parent company, except that Production is, of course, omitted, so that the organization of the dealer is made up of departments of Engineering, Sales, Installation, and Service.

While it is acknowledged that serious weakness in any of these four departments can spell failure for the dealer, the quality which is required above all in the selection of the dealer is none of these, for all of them can be and are obtained through the employment of men who are properly trained in each of the branches.

This quality which is demanded above all on the part of the prospective dealer is that he knows how to "make money." For while business acumen may be enhanced by experience, it is a gift of the gods far beyond the power of training to create.

MUCH RESEARCH

As stated above, all equipment design and all research and development programs are carried out at the home plant.

Because the house of Carrier covers the entire field of air conditioning with its manifold types of equipment, and because the Carrier organization always has been a pioneer in this highly technical industry based as it is upon profound scientific relationships, Carrier's research department is quite pretentious, being comprised of upwards of 80 specialists. Proof of the extent and thoroughness of this division for technical advance is the 1937 expenditure of \$400,000 for research, a figure quoted by Carl Ashley of the laboratory.

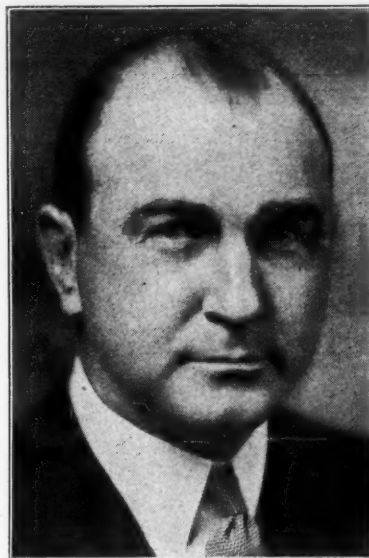
That it would react to the benefit of the entire air-conditioning industry as well as for the good of the leaders themselves, for the leaders to release in properly digested form through suitable channels such data and information as would be of assistance to the air-conditioning dealer-contractor at large in the performance of his work, is the belief of Mr. Ashley.

In agreement with this belief is Mr. Carrier's well-known contention that it is the duty of the experienced air-conditioning manufacturer to impart his knowledge of air conditioning to the less experienced beginners for the protection of the industry and its standing with its public, against the adverse advertising effect of improper installations.

FACTORY HANDLING

Carrier's policy regarding the remaining functions of sales, installation, and service is to handle the larger installations directly by factory experts, or supervisors, who act also in an advisory way toward

Why Lag? He Asks



L. R. BOULWARE
"Buy now or prepare to be hot."

Carrier's dealers, while sales, installation, and service for installations smaller than some stated tonnage limit are placed in the hands of local dealers.

This policy is somewhat flexible to allow for varying circumstances, so that as certain dealers gain experience and prove their ability, they are permitted to handle larger installations or participate in certain portions of the work, such as installation.

SELLING METHODS

In selling air-conditioning equipment, Mr. Boulware declared the most potent Carrier weapon for breaking down sales resistance to be Carrier's long years of pioneering experience, not only because of its influence upon buyer confidence, but because the great store of factual information which has accrued over many long years of operation of Carrier systems of all types under every conceivable condition, has made possible the making of balance sheets offering incontestable proof that it pays to air condition.

So great is the current interest in air conditioning that it was explained that prospective customers are obtained through inquiries sent in by the prospects themselves, thus obviating the necessity of canvassing. Mr. Boulware deplored one result of this great volume of inquiries, stating his belief that while much could be accomplished by canvassing, it is impossible to make a salesman "pound the pavement," as long as inquiries continue to come in uninvited.

RECRUITING SALESMEN

Salesmen for both dealers and for the Carrier organization are recruited from all types of salesmen, who are trained as to Carrier's methods, policies, and equipment, by schools which are held when required.

According to Mr. Boulware, the underwriting or financing of sales on time payment plans is no great problem at present, because most people or concerns who buy air conditioning

pay for it forthwith. Prospects whose credit or ability to pay is questionable are passed up in favor of the more promising prospect.

It was explained that as an approach toward saturation of the air-conditioning market is made, the time may come when it may be necessary to consider prospects whose financial standing is questionable, after which the problem of financing may become more serious.

Such financing of sales as is done was said to be handled in the conventional extended credit manner through the agency of various private and governmental loan facilities, the cost of financing generally requiring the addition of about 15% to the cash price.

LOCAL ENGINEERING

By W. A. Bowe, advertising manager, it was stated that advertising of air conditioning has been found to be most effective in publications which actually reach and interest the particular classes of prospects showing the most promise.

V. S. Day, the dealer engineer, declared "long distance engineering and estimating from a central point a failure because of the patent impossibility of complying with local labor and material problems, local codes, and other requirements."

Mr. Day explained that for this reason, engineering and estimating on smaller projects are performed by the local dealer (perhaps subject to check or supervision by factory engineers), while this work in connection with larger projects is done by Carrier supervising engineers located within the territory in question.

TRAINING ENGINEERS

According to Mr. Day, all field engineers, whether employed by the dealer or by the Carrier organization direct, are pretrained in Carrier field engineering schools in conformity with the Carrier field engineering manual, regardless of the engineers' previous experience.

It was explained that this policy is deemed necessary for the purpose of insuring the most effective and economical installation possible, as ideal field engineering consists not only of estimating loads correctly, but also of selecting the most suitable equipment and of making the most effective but simple layout as best suited to the equipment and to the peculiarities of the project. Thus it is necessary that the engineer have a thorough grounding in the equipment and methods of the organization within which he is to perform.

Mr. Day explained that recruits for these training schools are men who already possess considerable engineering experience, and that such students average about 28 years of age.

After the field engineer has been trained to Carrier methods and equipment he is kept in step with improving methods and advances in equipment design by a staff of super-specialists who keep in contact with such changes and hold classes in the field which all field engineers are required to attend.

The present policy of the Carrier Corp. is to "glorify" the field engineer, in an effort to attract men of the highest calibre to that branch. Whereas, a few years ago, all engineers strove to become salesmen, that tendency has been removed by decreasing the possible commissions of the salesman and raising the salaries of field engineers to more attractive levels.

In keeping with this policy, the present tendency is to divorce sales and field engineering entirely, so that the personnel of each department may concentrate upon its prime function in contrast to the attempt to economize common a few years ago by combining the sales and engineering functions in one individual.

Mr. Day stated his belief that so complicated are the load factors and other conditions to be met, and so

(Concluded on Page 7, Column 1)

CONDENSERS EVAPORATORS

33 years specialized experience in this field has qualified us to give you intelligent, practical engineering cooperation on both electric refrigeration and air conditioning applications, large and small.

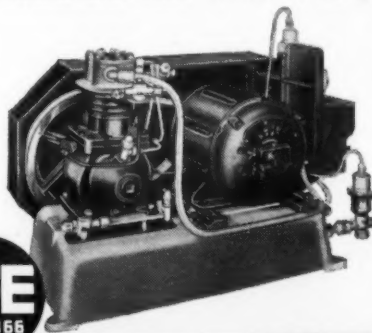
LONG MANUFACTURING DIVISION
BORG-WARNER CORPORATION
DETROIT, MICH.
WINDSOR, CAN.

LONG

Designed for

AIR CONDITIONING

Select from the complete line of M&E Compressor models exact units to meet specific air-conditioning requirements... modern, efficient compressors in which advanced engineering, exclusive features of construction, carefully selected materials and the finest of workmanship contribute to economy and dependability in operation and genuinely low service and maintenance costs. Write for complete catalog.



M&E Compressor Unit No. A-1125 W F
2 h.p. 2 cylinder compressor with water-cooled heads and continuous fin type counter-flow condenser... a highly dependable unit for small air conditioning jobs.

Complete line of
Freon Compressors
1/2 to 20 h.p.

MERCHAND & EVANS CO., PHILA., PA. U.S.A.
Plant at Lancaster, Pa.

BRUNNER

Send for the New
REFRIGERATION CATALOG

Eight Models of Compressors
Forty-one Models of Highsides
from 1/2 H.P. to 15 H.P.
BRUNNER MANUFACTURING CO.
UTICA, N. Y.

Air Conditioning No Longer a Luxury, Says Undertaker, Pleased with His Installation

TOLEDO—Installation of a year-around air-conditioning system in the chapels, family rooms, and offices of the A. C. Walter Mortuary here has produced a comfortable, quiet atmosphere which has pleased patrons and adds considerably to the prestige of the establishment, declares A. C. Walter, proprietor.

"Comfortable" feeling of the air in this funeral home and elimination of the pungent and sickly-sweet odor of flowers usually associated with mortuaries were among the first advantages to bring favorable comment from patrons, Mr. Walter says.

"Air conditioning is following the course of the radio, the automobile, and mechanical refrigeration," said the funeral director, commenting upon his installation, "and like these it is long past the experimental stage. It is no longer a luxury."

"As an effective, economical means of providing year-around comfort to patrons and to personnel, and of increasing prestige by word-of-mouth commendation, air conditioning is practically a necessity today in the modern funeral home, and no progressive one can do without it."

Approximately 4,000 cu. ft. of conditioned air per minute is circulated through the Walter mortuary. The air conditioner has been placed in the basement, suspended from a built-up pipe frame to avoid transmission of vibration to the floor above. A 7½-hp. compressor furnishes the necessary refrigerating effect.

A novel feature of the air-distribut-

ing system of this installation is that no ducts are visible in any of the rooms. Clothes closets, stud spaces, and even the interior of a bookcase, are utilized for risers. Air outlet grilles are located in the side walls.

Grilles are painted black against a surface of wall papers in light colors, and these were so placed and painted to attract attention of patrons to the installation, according to the proprietor.

One very noticeable improvement after the installation was made was the new lease on life given cut flowers placed in the chapel and other rooms by families of deceased persons, Mr. Walter says. He has found that conditioned air preserves floral wreaths and sprays for long periods in their original state of freshness.

Return air grilles, which are connected directly to the common air system in the basement, are placed inconspicuously in carefully chosen locations where patrons will not notice them.

The system is equipped with complete electric zone controls. Two zones, one comprising two chapels and two family rooms on the first floor and the other including a dining room and offices on the second floor, may be controlled independently. An electrically-operated thermostat operates both zones in unison or separately, as the case requires.

A duct thermostat placed in the return air duct near the air-conditioner can produce an effective temperature of 75° in the chapels and 70° in the offices. The dry-bulb temperature is lowered, with an increase in relative humidity to a compensating degree, thus providing proper balance for maximum comfort regardless of outside temperatures.

Admission of outside air to the system is measured by a master temperature control instrument located on a control board placed near a basement window. An outside bulb of this instrument regulates automatically the setting of the zone thermostats according to outside temperature conditions.

By means of this instrument, an outside increase of 5° causes a temperature rise of only 2° inside the building. A thermostat in the fresh air duct keeps the fresh air damper open until outside temperature is 70°.

One feature of this system which Mr. Walter praises highly is the provision of an atmosphere of quiet relaxation because of closed doors and windows. This is most beneficial to nerves of patrons while services are being conducted in his funeral chapels, he says.

York Ice Machinery Corp. provided equipment for the installation.



Nine Distinct Services from FRICK

Refrigeration

Sharp and Dohme, pharmaceutical chemists whose 9-story plant in Philadelphia is a block long, have used a 100-ton automatic Frick Refrigerating System since 1931—for conditioning air, making ice, cooling drinking water, condensing distillates, freezing waxes, chilling elixirs, hardening gelatine, making insulin, and storing serums worth millions of dollars.

Whatever the needs of the customer, they can always be met with Frick Refrigeration. Machines for ammonia, Freon-12, methyl chloride and carbon dioxide, in all commercial types and sizes. A world-wide organization, with unequalled experience, awaits your service.

WAYNESBORO, PENNA. U.S.A.
FRICK CO.
DEPENDABLE REFRIGERATION SINCE 1882

Tulsa Newspaper Issues 10-Page Section on Air Conditioning

TULSA, Okla.—Notes of progress, optimism, and civic pride permeated the special 10-page air-conditioning section which Tulsa Daily World included in its edition of Sunday, May 30.

Keynote of the section was its lead article, written by Walter Ahlum, the World's real estate editor, which described how Tulsa, a city which but a year ago could boast of only one completely air-conditioned office building, had recently engaged in an orgy of modernization and air conditioning resulting in conditioning of many of the city's most prominent stores and office buildings, and residences.

Mr. Ahlum's article concluded with the opinion that "by July 1 Tulsa will have the largest percentage of air-conditioned space, according to square footage and population, of any city in the world . . ."

Editorial content of the section consisted primarily of news and feature articles pertaining to the history, development, and local application of air conditioning.

All of the section's advertising space was taken by companies connected with the air-conditioning industry, or by local stores and buildings equipped with air conditioning.

American Airlines Buys Equipment to Condition Planes Standing at Airport

CHICAGO—To air condition its passenger planes between flights, American Airlines, Inc. has purchased 12 General Refrigeration Co. air-conditioning units, portable, self-contained, and mounted on high speed commercial automobile chassis, reports William Littlewood, vice president of engineering for the air transport company.

"The air conditioner," Mr. Littlewood says in describing the streamlined unit, "has its own gasoline-driven power supply, with a 15-kw. generator supplying current for the electric motors. A blower fan drives air over the refrigerating machine's cooling coils, in which Freon gas is used. This cooled air passes into the cabin of the plane at the rate of 1,200 c.f.m. through a large hose."

The hose is fitted into the plane by means of an attachment in the belly of the fuselage, the nozzle jutting up through the floor.

"For winter operation," continues Mr. Littlewood, "jacket water from the gasoline engine is utilized in conjunction with four electric grids to heat the air which is then blown through the hose into the plane."

The body of the truck in which the unit is housed is streamlined, sound-proofed, and ventilated, and all ducts are sound-proofed.

"An interesting feature which makes the air conditioner valuable in an emergency," Mr. Littlewood explains, "is the fact that it is in itself an auxiliary power plant, and in case of need can be used for supplying power to the radio station or for lighting."

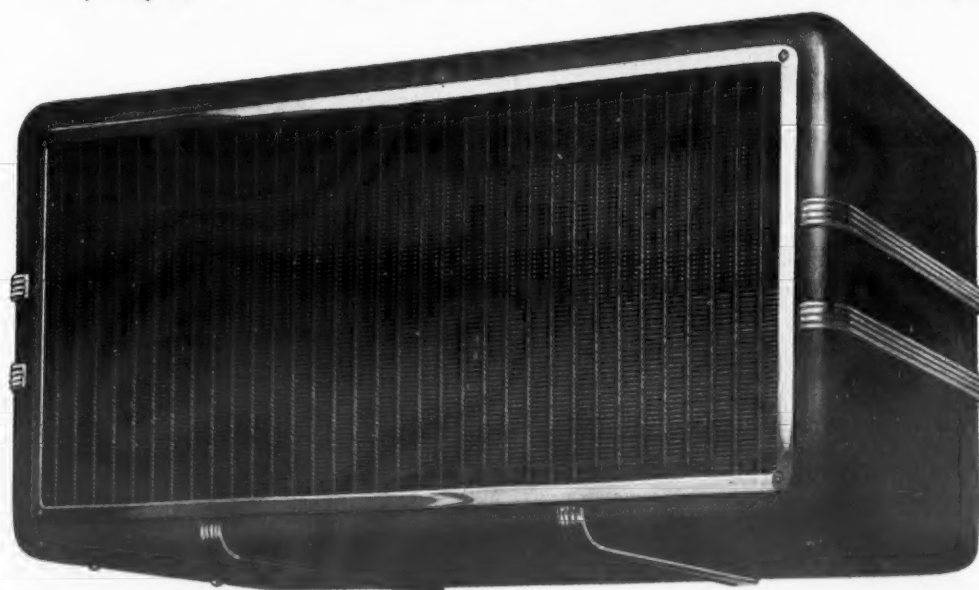
In use, the conditioner has brought the temperatures of 21-passenger airplanes from midsummer heat to 70° in 10 minutes. In winter the machine will make it possible for the planes' cabins to be warmed to a comfortable 70° in about the same length of time.

American Airlines' plane depots in Chicago and Newark are already equipped with the new air-conditioning trucks, and by June 15 it is expected that units will be in use at the airports of Dallas, El Paso, and Ft. Worth, Tex., Phoenix and Tucson, Ariz., Memphis and Nashville, Tenn., Washington, D. C., Boston, Cincinnati, and Detroit.

Spencer to Install Equipment in New Topeka Building

TOPEKA, Kan.—F. M. Spencer & Sons has been awarded a contract to install Westinghouse air-conditioning equipment in the five-story Palace Clothing Co. building here.

YOU CAN SELL SUMMER COMFORT—Where and When They Want It With— GR UNIT COOLERS

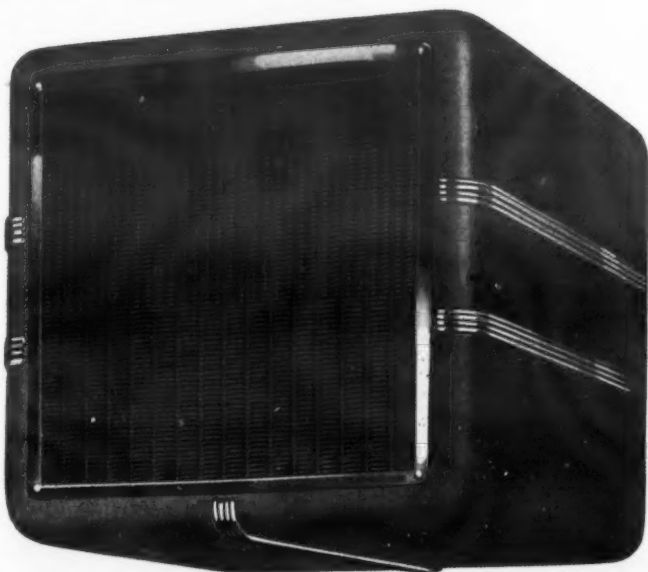


Automatically Controlled
No Alterations Nor Ducts Necessary
Directional Flow Grills
Removable Air Filters

Controlled Cooling at Controlled Price

G-R Unit Coolers are of suspended, propeller-fan type. Designed to provide cooling, dehumidification and circulation of air in single rooms and "comfort zones". The source of cooling may be a remotely located direct expansion Freon or methyl chloride refrigerating machine or circulating cold water. Cooling coils are constructed of copper tubes with metallically bonded copper fins. A heat interchanger used on the coolers employing mechanical refrigeration increases the refrigerating capacity by pre-cooling, and reduces suction line sweating by superheating the suction vapor.

If you want to handle a comfort cooling line that is backed by practical engineering, modern design, precision workmanship and the resources and experience of a company that has devoted itself to the pioneering of air conditioning development, write for information covering the G-R distribution plan. It furnishes G-R distributors with every modern advantage toward securing big volume, profitable air conditioning business.



GENERAL REFRIGERATION SALES COMPANY
Dept. AF-6, Beloit, Wisconsin, U. S. A.

Carrier Officials See No Great Reductions in Air Control Costs

(Concluded from Page 6, Column 5)

diverse are the problems to be solved by the air-conditioning field engineer, that no great savings in installation costs due to simplification of field engineering methods are possible.

He further declared the greatest reduction in costs without sacrifice in performance to be obtainable by perfecting and "glorifying" the field engineer, by training him more thoroughly in the best methods and practices so that fewer costly mistakes will be made, and more efficiency and economy will result.

The Carrier field engineering practice is to use simplified rule-of-thumb engineering methods only in connection with the self-contained equipment with which no thermostat control or guarantee of accurate control is provided.

In installation work, the Carrier organization employs its own erectors, who install the equipment on large projects, and generally carries its own force of sheet metal workers for fabrication of ductwork. However, piping work generally is sublet. For the installations of smaller sizes which come under the dealer classification, the dealer generally does his own installation work, and may or may not maintain his own sheet metal workers, pipe fitters, and electricians.

McCleery Sheet Metal Co. Occupies New Building

JACKSON, Mich.—McCleery Sheet Metal Co. has moved into its new building at 1116 W. Ganson St., equipped with new machinery to continue its air-conditioning activities.

New Restaurant in Minot, N.D. Is Air Conditioned

MINOT, N. D.—Olivier & Uleberg, with offices here and in Williston, installed a York air-conditioning system in the local Coffee Cup restaurant, which opened May 21.

TRY IT 15 DAYS

The low cost of this portable recording thermometer means you can afford to have one. It is useful on every job. Try one under our 15 Day Trial Plan. Write today for folder showing prices and Trial Offer. Address Dept. M. Ad-



ASK YOUR JOBBER
PRACTICAL Recording Thermometer
PRACTICAL INSTRUMENT COMPANY, 2717 N. ASHLAND, CHICAGO

Washington Electric Institute Presents Arguments against Proposed Code

(Continued from Page 1, Column 4) board of Carrier Corp., advised the code committee members to work with the industry in drafting a code that would offer protection without hindering the progress of the industry. He spoke against the idea of a broad general code, and suggested that a series of codes be drawn, each to apply to a major division or part of the industry.

Other groups and individuals which entered briefs protesting various of the code provisions were: L. F. Nordine, representing the American Society of Heating & Ventilating Engineers; Fred Oakes, Fred Oakes Associates, Inc., Washington, D. C.; Hotel Owners Association; Washington Real Estate Board; Leonard J. Clark, representing International Union of Operating Engineers; Refrigeration Contractors Association, Inc., of Washington, D. C.; Washington Gas Light Co.; Robert J. Driskill, representing the Washington Druggist Association; District Grocery Stores; D. B. Peebles, Peebles Chemical Co., Roslyn, Va.; Julius Garfinkle & Co.; Master Plumbers Association of the District of Columbia; Motion Picture Theater Owners of Washington; Carey Ice Cream Co.

One brief that was permitted by the code committee to be read into the record—and which may carry the most weight with the committee because of the facts it presents and the organization behind it—was that prepared by the Electric Institute of Washington, which is said to repre-

sent approximately 90% of the volume of the business done in all branches of the electrical industry by individuals and organizations which serve Washington in the sale, installation, maintenance, and repair of all forms of electrical equipment and service.

Following the presentation of the Electric Institute's brief a suggestion was made that the refrigeration code committee of the District appoint a committee—composed of manufacturers, distributors, installers, service men, commercial users, and utilities, to sit in with the District officials to formulate an acceptable and workable code.

The following excerpts from the Electric Institute's brief are published because they present so well the refrigeration and air-conditioning industry's attitude on codes, and therefore it may be of use to industry representatives in other areas who are confronted by the code problem:

"The electrical industry, and particularly the electric refrigeration division of it, is in accord with the fundamental principle that necessary safeguards for public health should be maintained to protect the public from accidents in the use of refrigerating and air-conditioning equipment. Any code covering refrigerating and air conditioning in the District of Columbia, or any other place, should be authoritative and reasonable, and based upon facts, not upon theories.

"The fine record of safety maintained in the District of Columbia in the sale and use of all forms of refrigerating and air-conditioning equipment does not appear to call for such drastic requirements as are contemplated in the proposed revision of the refrigeration code.

"Experience indicates that the proposed basis of permit fees and the regulations surrounding the procuring of permits is detrimental to the interests of the public, to the users of this equipment, and to the progress of the industry.

"Many of the limitations of the proposed Code relate to restriction in the use of refrigerants. We believe that these drastic restrictions are not warranted by experience.

"Each refrigerant has its fields of particular usefulness and highest efficiency. All have high degrees of safety if properly used.

"The manufacturers of refrigerants, and the manufacturers of equipment in which the various refrigerants are used, annually spend vast sums of money in research and development; and that these manufacturers are successful in their

efforts to promote a high degree of safety is shown by the ever-increasing demand for refrigerating and air-conditioning equipment. The public acceptance grows out of the satisfactory and safe operation of millions of refrigerating and air-conditioning installations throughout the United States and the rest of the world.

"Refrigerants used in refrigerating and air-conditioning equipment are manufactured in many places throughout the country. All refrigerants are products in interstate commerce and, as such, they are manufactured and shipped under definite regulations prescribed by the Interstate Commerce Commission and by the Bureau of Explosives.

"Enforcement of these sections of the proposed Code, such as Section S211d, would go needlessly far in excess of the requirements of the aforementioned Governmental bodies.

"Under the repair and maintenance requirements of the proposed code, the use of a very large percentage of the present refrigerating and air-conditioning equipment would be prohibited. The requirement that any equipment upon which repairs or alterations are made would have to be brought into conformity with the requirements of the proposed code would needlessly jeopardize the investment of millions of dollars by property owners through the District of Columbia.

"If the condemnation of such equipment were necessary for the public welfare or to safeguard the public health, there could be no objection to it; but such is not the fact, as this equipment is satisfactorily and safely performing its function under present practices. The cost of new equipment would likewise be considerably higher for these same unjustified reasons.

"Sections such as 831 and 832 impose an unwarranted tax upon distributors and retailers merely for the privilege of doing business. This tax could easily run in excess of several hundred dollars per year for each typical major sales outlet, and would increase the cost to the ultimate user.

Domestic Refrigeration

"The enactment of paragraph S208e of the proposed code would deprive the citizens of the District of Columbia of the privilege of buying and using many types of refrigerating units (household refrigerators and water coolers) which are being extensively used in this territory and which experience, over a number of years, has proved safe for domestic use.

"The proponents of the code seek to regulate out of existence the units manufactured by at least 10 of the 16 companies listed above, in spite of the fact that they are built to meet the safety requirements of the Underwriters' Laboratories and exist-

ing municipal codes throughout the country. Millions of these units are in use in this country and elsewhere.

"Even with the early models made during the pioneer days of the industry, we know of no record in the District of Columbia or elsewhere of any serious accidents to persons or property which would warrant such a drastic restriction.

"Without any such record of accidents to justify these restrictions, it is obvious that the fears which have engendered them are based not on any reasonable probability but only on the most far-fetched kind of vague possibility. If the same sort of reasoning were applied consistently to all other regulatory municipal ordinances, it would result in regulations requiring completely fire-proof structures so expensive to build that no one could afford them.

"Mechanical refrigeration is recognized as a household necessity for the proper preservation of food and the protection of public health. To date, there has been in the District of Columbia a free and open market providing unrestricted competition. As a result, the prices of mechanical refrigerators have been steadily decreased, together with lower operating costs and higher degree of safety, resulting in the widespread use of this vital factor for the preservation of health among the people in the lower income groups.

"The enactment of the paragraph under discussion will destroy this free competitive market by limiting, without cause or jurisdiction, future sales to the few makes which might possibly be able to meet the requirements of this paragraph. Furthermore, this paragraph would legislate out of business, in this community, a large number of distributors and retail dealers, with attendant increased unemployment in the District.

"In addition to the objections to paragraph S208e, just recited, protest is also vigorously entered against the provisions of paragraph 823. Its enactment would prohibit the repair of many thousands of existing household refrigerators which could not be made to conform to the proposed code.

This would result in the immediate spoilage of the foods on hand, to the detriment of the public health, particularly that of children, invalids, and convalescents, who depend upon a supply of fresh milk as an essential part of their nourishment. In many cases the financial position of the family would prohibit the purchase of a new refrigerator to replace the old one.

"Another important factor in this same connection is that of existing contracts. Thousands of domestic refrigerators have been sold under long-term warranties under which the manufacturer, distributor, and retail dealer have assumed the liability for maintenance, for which the user has paid in advance.

"The prohibition against the repair of units which do not conform to the new code would force the repudiation of these contracts and subject the manufacturer, distributor, and dealer to possible liabilities of a serious legal nature. In the last

analysis, it is the householder who would suffer from the regulation.

Other Self-Contained Unit Types

"These 'self-contained units' include, among others, such common devices as water coolers, bottle coolers, beverage coolers, ice cream cabinets, air-conditioning room coolers, and the smaller refrigerating units often used in small restaurants and retail establishments.

"Here again experience, both locally and nationally, has been such as to prove beyond a doubt the safety of these devices in operation, not only for domestic use but for small commercial and office use.

"The fundamental similarity of the mechanism, operation, amounts of refrigerant, and every-day use of these devices, should, in the opinion of the industry, place them in the same classification as domestic refrigerators.

"No fabrication of the equipment is necessary on the premises of the user and no expert technical experience is required for their installation and operation.

"Classifying this type of equipment in the same category as the larger commercial refrigerating plants and air-conditioning equipment would restrict the installation of the equipment by users who should be permitted the advantages available through such equipment.

"Inasmuch as no separate plans are drawn for the installation of individual units of this type, and because repairs and adjustments can be made by experienced service men without danger to the public, it would appear to be quite unnecessary to include them under the requirement which stipulates that detailed drawings and specifications be filed with the plumbing department and that individual permits for their installation be taken out.

"It is the recommendation of the industry that such 'self-contained units' be included under the same regulations as recommended for the sale, distribution, operation, maintenance, and repair of domestic refrigerators.

Commercial & Industrial Refrigeration

"Typical of the results from the enforcement of the provisions of the proposed code would be the practical condemnation of present large industrial refrigeration installations such as ice plants, breweries, and storage warehouses, which have proved safe and satisfactory in operation.

"Objection is raised to the proposed code on the grounds that the refrigerant limitations, as stated in the refrigerant tables as applicable to commercial and industrial refrigeration, are too restrictive for practical application.

"The regulations of the new code would increase the cost of new commercial and industrial refrigeration plants, no matter what refrigerant (Concluded on Page 9, Column 1)



Joe Needs a Friend TO SAY CLOGGED VALVES AREN'T HIS FAULT

Not the unlucky service man, but natural conditions, cause the clogging of refrigerator valves by moisture. No matter how thoroughly the mechanism is baked in the factory, and in spite of careful handling thereafter, moisture may remain trapped in the intricate passages.

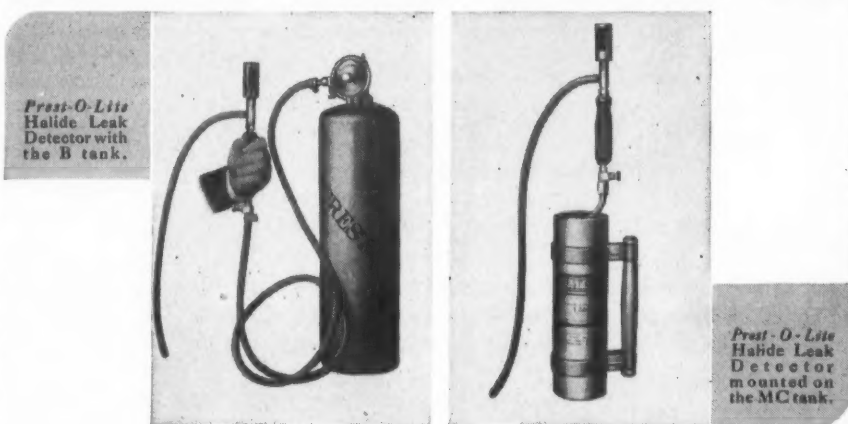
Trapped moisture is what Activated Alumina takes care of. Activated Alumina adsorbs moisture, drinks up water and water vapor and holds it. Therefore, a cartridge of Activated Alumina, temporarily inserted in the refrigeration system through which the refrigerant circulates, takes out the moisture which makes trouble. Such cartridges for convenient temporary insertion are made by several manufacturers; the cost is reasonable. The same principle is used to prevent trouble from the start on several makes of refrigerators which have Activated Alumina cartridges permanently built in. ALUMINUM ORE COMPANY, Sales Agent: ALUMINUM COMPANY OF AMERICA, Pittsburgh, Pennsylvania.

ALORCO

ACTIVATED ALUMINA

PREVENTS CLOGGED REFRIGERATOR VALVES

PREST-O-LITE HALIDE LEAK DETECTOR



The Prest-O-Lite Halide Leak Detector is a positive, sensitive device for locating leaks of non-combustible halide gases in refrigerating and air-conditioning units. These gases—such as F-12 (Freon), F-21, F-114 and Carrene—are relatively odorless, tasteless and colorless, properties which render necessary a quick, sure method of locating leaks.

Ask your jobber or any Linde office for a demonstration and descriptive folder.

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

UCC

New York and Principal Cities

In Canada: Dominion Oxygen Company, Limited, Toronto

FEATURES

- 1 Assures instant reaction to any concentration of refrigerant gases.
- 2 No preheating, pumping or priming required.
- 3 Economical to use. Need not be lighted until actual testing begins.
- 4 Two-color flame variation gives visible indication of amount of gases.
- 5 Quick clearing of flame after exposure to leaks.
- 6 Reaches easily into inaccessible places.
- 7 Readily portable—ideal for service work.

UNIVERSAL COOLER uses

SYLPHON BELLOWS for Crankshaft Seals

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KNOXVILLE, TENN., U.S.A.

Representatives in All Principal Cities in U. S. A. and in Montreal, Canada and London, England

Washington, D. C. Code Opponents Stress Present High Safety Factors

(Concluded from Page 8, Column 5)

were used. This would be detrimental to the ultimate user of the equipment.

"The code may fairly be interpreted to indicate that many existing systems, as installed under present practice, would have to be materially rebuilt or entirely replaced, in the event that a repair or modification of such systems was found necessary either to keep the equipment in operation or to expand it to take care of increased business.

"The requirements of the proposed code, as regards the necessity of obtaining permits for repairs or alterations on commercial and industrial refrigeration systems, are beyond practical limits for the servicing organization, and more particularly for the user.

"It is well recognized that the average commercial refrigeration installation is used either for the preservation of food of a perishable nature or for the production of perishable food products, and any restraint which is placed upon prompt repairs and servicing equipment used for these purposes is in itself forming a public hazard in the spoilage of food products.

"Objection is also registered against fees proposed, particularly as affecting permits required for service and repairs. It can readily be shown that the fees applying to repairs would in many cases be equal to the normal service charge and in many cases be greater than the service charge.

Air Conditioning

"It is the intention of this portion of the brief to discuss only in general form the effects of the proposed code on the air-conditioning industry as the code would affect the user and the seller of air-conditioning equipment.

"As is true with other divisions of the electrical industry in the refrigeration field, it is the full desire of the air-conditioning industry to provide systems which are safe even for the most inexperienced operator to use. Every effort has been made by the manufacturers toward providing the simplest, yet safest, type of installations.

"Air conditioning is recognized as particularly necessary in the daily life of the District of Columbia. This is because of the seasonal high temperatures and excessive humidity. The District of Columbia has a higher per capita installed horse-

power for air conditioning than any other city in the country.

"Certain limitations have been indicated in the refrigerant schedule of the proposed code, limiting the quantity of refrigerant used for air conditioning.

"These limits have been established arbitrarily on the assumption that the entire charge of refrigerant in any unit would be discharged instantaneously. Past records of the industry indicate that the instantaneous releasing of the entire charge into a given area is an extremely remote possibility and not a probability.

"In addition to limiting the refrigerant charge to a very high factor of safety, methods of installation are dictated in the proposed code which needlessly double or treble this already high factor of safety set in the refrigerant charge.

"The results of the methods of installation as dictated in the proposed code will increase the cost of air-conditioning installations to such an extent as to make their use practically and unnecessarily prohibitive. The user's operating cost will also materially increase, further reducing the possibility of the greater use of air-conditioning equipment.

"A fair interpretation of the code as relating to repairs, modifications, et cetera, would indicate that users already enjoying the benefit of air conditioning, would, in the event of a necessary repair or in the event of a desired addition to an existing system, be required to bring their existing plant up to the requirements of the new code.

"Objection is made against the proposed permit procedure, as it would cause undue delay in the installation of air-conditioning systems, in which time is the essence of the contract.

"The proposed code prescribes certain procedures to be followed in the event of repairs or services necessary to an air-conditioning system. Objection is raised to this procedure for the simple reason that it is impracticable from the point of view of both the user and the company rendering service.

"A strict interpretation of the code indicates that no repair can be made upon an air-conditioning system without first obtaining a permit, and after repair is made, the system cannot be placed in operation until an inspection is made.

"This can only result in an unwarranted loss of the benefits of air conditioning to the user in having

necessary and emergency repairs made, and in an unwarranted additional expense for the cost of permits necessary to make such repairs.

"The proposed code sets forth certain fees for installation, maintenance, and repair permits to air-conditioning installations. Objection is registered against the fees as indicated, on the premise that they are too high. Unquestionably, permits required for repairs of certain classes of equipment would cost more than the labor and materials to make the repairs.

Summarizing

"In view of the high record of safety of refrigerating and air-conditioning equipment under present practices in the District of Columbia, we submit that there is no justification for this proposed drastic code. We recommend that present practices be continued and that further action on the proposed code be postponed until the industry shall have had sufficient time to prepare and offer its recommendations for the revision of the suggested code."

Some of the code paragraphs in dispute follow:

REPLACEMENT, MODIFICATION, AND REPAIR

823. No permit shall be issued: (1) to increase the capacity of or the amount of refrigerant in any system; (2) to replace or repair any refrigerant-containing part of a system located in an institutional building or a public assembly building; or (3) to replace, or to remove from its mounting, base, or support for repairs, a compressor, pressure vessel, condenser, or evaporator of any system located in a building containing a room or space used or equipped for sleeping purposes or used for the retail sale of merchandise in a basement or above the first or ground floor; unless the system conforms or will be made to conform with all the

requirements of the "D. C. Refrigeration Code."

FEES AND PERMITS

831. The fees for permits and inspection of unit systems shall be: \$25 for each model submitted for inspection and a certificate of approval; \$10 for each general permit; \$2 for each separate permit for a unit system with apparatus rated at 1 hp. or less, plus 20 cents additional for each horsepower or part thereof in excess of 1 hp.

832. The fees for installation permits for non-unit systems shall be: \$1 for each evaporator or connection therefor; \$5 for each heat extraction or other generating apparatus rated at 10 hp. or less, plus 20 cents additional for each horsepower in excess of 10 hp.

834. The fees for permits for replacement, extension, or repair shall be: \$2 for each condenser; \$2 for each receiver; \$4 for each combination condenser-receiver; \$1 for each evaporator or connection therefor; \$2 for each heat extraction or other generating apparatus rated at 10 hp. or less plus 20 cents additional for each horsepower in excess of 10 hp. The fee for permits for repairs to other parts shall be \$1.

835. The fees for maintenance permits shall be: \$1 for each unit system; \$2 for each heat extraction or other generating apparatus rated at 10 hp. or less, plus 10 cents additional for each horsepower in excess of 10 hp. If application for renewal of a maintenance permit is not filed prior to the expiration of such a permit, the fee shall be the same as for a new installation. Maintenance permits for new installations, valid for one year from date of last inspection, shall be issued without charge, provided an installation permit was issued prior to installation.

D. C. REFRIGERATION CODE

S260e. The machinery room shall be in a separate building or cut off from the rest of the building by vapor-tight walls, pierced only by piping or conduit, with openings only to the outer atmosphere.

S208c. A unit system, unless excluded by the provisions of Par. S208a, S208b, or S208e, may be located anywhere provided the unit system complies with all of the following specifications: (1) System

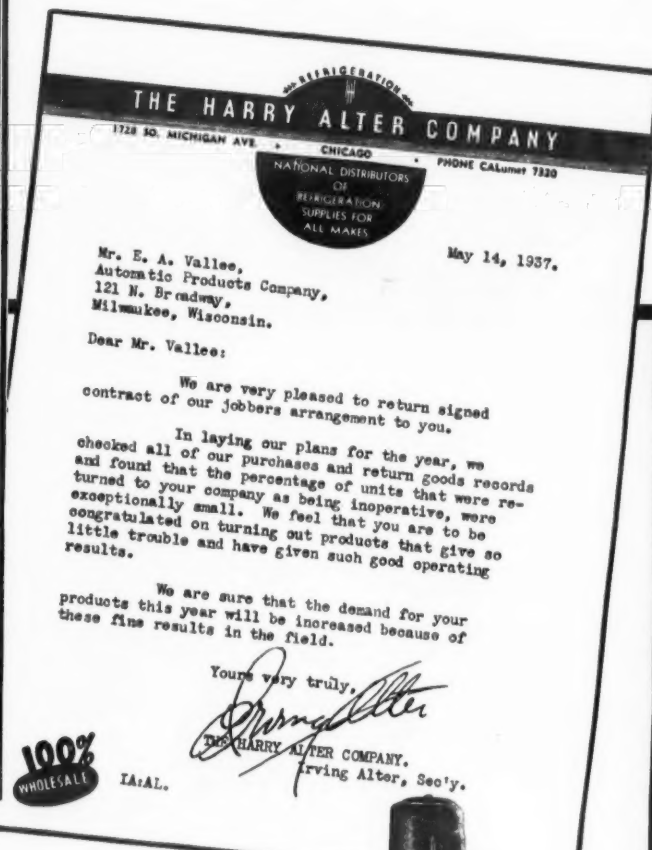
contains not over 3 lbs. of a refrigerant listed on Table 1; (2) System does not depend upon contact between moving and stationary surfaces for retention of refrigerant or lubricant; (3) System contains no stop valve in the refrigerant circuit; (4) System has all joints brazed or welded on receiver, condenser, evaporator, and refrigerant lines; and (5) System is charged with refrigerant at the factory and so sealed that it cannot readily be recharged on the premises where installed, which is prohibited.

S211d. Regardless of the horsepower or amount of refrigerant employed, all refrigerant-containing parts shall be confined to a building or that portion of a building used exclusively for the housing of refrigerating equipment and the manufacture, processing, and wholesale storage and handling of materials, and cut off from other portions of the building used for other purposes by vapor-tight walls of at least one-hour fire resistive construction, pierced only by piping or conduit, and entered and ventilated from the outside only. All compressors and moving machinery connected thereto shall be located in a machinery room complying with the following: (1) having a floor of safe load-carrying capacity; (2) containing no flame-producing apparatus or non-essential combustible materials; (3) provided with adequate clear space and illumination for inspection and servicing; (4) ventilated as required in Par. S212; and (5) having no windows or other exterior openings (a) within a radius of 20 feet from any building or portion of a building in which a refrigerant in Group III is not used or permitted, or (b) below any fire escape or open stairway within a radius of 40 feet.

S211l. Where ammonia is used, automatic pressure-relieving devices shall discharge as follows: (1) systems containing less than 12 lbs. of refrigerant shall discharge into a tank of water, specified in Par. S211j, or to the outer atmosphere as specified in Par. S211h; (2) systems containing 12 or more pounds of refrigerant shall discharge into a tank of water, specified in Par. S211j, or through an approved automatic Fire Department valve and mixer having connections as specified in Par. S211k; (2) if a Fire Department mixer is used, automatic pressure-relieving devices shall also discharge to the outer atmosphere as specified in Par. S211h.



Mr. Irving Alter,
The Harry Alter Co., Chicago, Ill.



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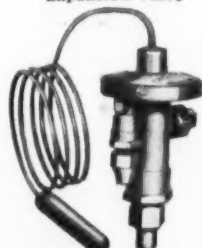
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Around the World With George F. Taubeneck

The Eyes of America have been focused on England—and particularly London—this year, as a result of the Coronation whoopla, and the Greatest Romance in History, that between an ex-King of England and an ex-wife from America.

Herewith is presented a continuation of the editor's brief panorama of London-town, embellished with his own candid camera snapshots of the city.

Mighty Mite

A small sidestreet between Whitehall and St. James's Park is the real heart of the British government. Downing Street, which has only three numbers, is undoubtedly the most important little avenue in the world. No. 12 is the Government Whip's Office, No. 11 the residence of the Lord Privy Seal, and No. 10 the official home of the Prime Minister.

No. 10 is disappointingly drab, although it seemed to me that it well fitted the spare, austere personality of Stanley Baldwin, its occupant at the time. It is merely a simple town home of dull brown brick just like the other two houses in the street.

A three-story building with a good-sized attic, it contains 40 rooms, with only three bathrooms. There are five regular bedrooms, although some of the others are convertible.

Most of the rooms are heated by open fires, even though steam heat is available. Stanley Baldwin insisted on the installation of a few more radiators to get more comfort out of the central heating system. Baldwin also saw to it that another gas range was added to bring the total up to three.

The front door of No. 10 bears a shiny brass plate on which is inscribed, "First Lord of the Treasury," the traditional official title of England's Prime Minister. There is no constitutional measure by which a prime minister is legally recognized, nor is there any constitutional recognition of a cabinet.

Behind the mansion of the Prime Minister is a high-walled garden in which England's leading statesman relaxes or teases (operator: please do not add an "e" to this word) his visitors. Cabinet meetings, official and unofficial, are held in the house.

Fronting on St. James's Park are the Treasury, the Foreign Office, and the India Office.

St. James's Park, lying between Buckingham Palace and the Government Offices, and Birdcage Walk and The Mall, is one of the most beautiful of London's public parks. Before the reign of Henry VIII, it was nothing but a desolate, marshy stretch of ground with the St. James the Less Leper Hospital on the north side.

Bluff Hal had the hospital torn down and replaced by St. James's Palace. For his personal pleasure he had the marsh drained and made over into a deer park.

When Charles II was king the park was again altered. This time it was transformed into a floral garden by a French landscape gardener. The artificial lake that today occupies the greater part of the middle of the park was dug at the order of George IV.

St. James's Park is a favorite spot for painters, serious horticulturalists, nature lovers, jes' plain lovers, and duck and swan-feeders.

Buckingham Palace

Just beyond the western gates of St. James's Park stands Buckingham Palace, present London residence of the Royal Family. George III bought the mansion from the Duke of Buckingham, and George IV had it remodeled.

Queen Victoria was the first ruler to use it to any great extent as a home. Edward VII, who was born in the palace, lived in it for a great part of his life. He died there May 6, 1910.

It is in front of Buckingham Palace, when the king is in residence there, that the picturesque ceremony of the changing of the guard takes place. I happened to "catch" this act by accident one day, when hurrying to make a call in that vicinity.

Spread out behind the palace is a

series of extensive and lovely gardens with an idyllic, meandering pond in their midst.

Although it is no longer used as the king's residence, St. James's Palace is the official Palace of the Court. Foreign ambassadors are accredited to this stone mansion.

It was the residence of Henry VIII, Edward VI, Mary Tudor, Elizabeth, William IV, and his queen Adelaide. The India Round Table Conference of 1930 was held there.

When he was Prince of Wales, the former King Edward VIII lived in York House, which is the western part of St. James's.

Pall Mall

Pall Mall, pronounced Pal Mal and not Pawl Mawl as I thought at first, is generally believed to have derived its name from the ball game *paille maille* played in St. James's Park by Charles II and his cronies.

It is now the heart of London's Clubland, and embraces such venerable institutions as the Athenaeum, which in 1924 celebrated its hundredth anniversary, the Reform Club, the Carlton Club, the Army and Navy, and the Oxford and Cambridge Club.

Around the memorial statue of George III, from whose harsh rule the American Colonies bolted, have grown up the London offices of the chief American shipping companies.

Pall Mall branches out into a couple of small, one-block streets, one of which leads into Trafalgar Square and the other into Charing Cross, which is generally accepted as the center of London.

The dominant feature of Trafalgar Square is the Nelson Monument, a granite Corinthian column towering 185 feet above the four stone lions crouching on the pedestals at the base. Perched on top of the column, like a flag-pole sitter, is a statue of England's greatest admiral. It is more than twice life-size.

The monument stands facing the long vista of Whitehall, and from its base may be had an excellent view of Parliament at the other end of the broad avenue.

On fine days, Trafalgar Square is infested by the leather-lungs who are either crowded out of Hyde Park or who prefer this open square as a place to expound their theories, ideas, and complaints to a generally unheeding public. The proverbial soapbox is the regulation platform.

Across the northern side of the square extends the long front of the National Gallery, and on the east is

the old church of St. Martin's-in-the-Fields, in which pews are reserved for the Royal Family.

Piccadilly Circus

A short hop northwest of Trafalgar Square is Piccadilly Circus, the meeting place of Piccadilly and Regent Street. It is one of the busiest traffic centers both on and below the ground in the whole city or anywhere in the world, for that matter. It was, to this writer, the most unflaggingly interesting spot in London. I saw everything there from a fight between two Cockney women to the squelching of a masher by Sylvia Sydney.

With Leicester Square (a couple of streets to the east), its co-partner in the Tommy Atkins song, Piccadilly Circus is the center of London's night life, for in these two compact areas are clustered umpteen theaters and night clubs. After sundown the electrical spectacle is fully as dazzling as Times Square in New York.

Piccadilly itself is only a mile long, running from Hyde Park Corner to the Circus, but it is one of London's busiest and most attractive streets. Smart shops, stately mansions, and fine hotels and clubs are ranged along both sides.

Berkeley Street, which runs into

Piccadilly at the half-way mark, leads to the one-time residential center of the West End, Berkeley Square, which is now being transformed into the shopping district.

From Berkeley Square to Hyde Park is just a short westward jump. Mention of Hyde Park calls up immediately two things: Rotten Row and the soapbox spielers. Right on top of these two thoughts comes a mental picture of the Serpentine, that huge artificial lake that was the gift of Queen Caroline, consort of George II, and which is now a haven for swans whose dower rights are hotly contested by model yachts.

Rotten Row, the Anglicized version of *route en roi*, is a mile and a half bridge path practically monopolized by the equestrians of society, who love to canter under the shade of the long avenues of trees bordering the path. At night the horses are supplanted by a thousand human cows with a sex for sale.

The Long Water, a narrow extension of the Serpentine, separates Hyde Park and Kensington Gardens, home of the statue of Peter Pan and scene of some of the most beautiful landscape gardening in all England.

At the western end of the gardens stands Kensington Palace, birthplace of Queen Victoria and Queen Mary. It was made into a royal residence for William and Mary by Wren.

To the south of Kensington Gardens is Museum Land, so-called because there one finds assembled Albert Hall, the Royal College of Music, the Imperial Institute, the Imperial War Museum, London University, the City and Guilds Institute, the Science Museum, the Natural History Museum, and the Victoria and Albert Museum.

Royal Albert Hall

Royal Albert Hall, built as a memorial to Victoria's consort, will comfortably hold an audience of more than 8,000 persons, thus making it one of the largest auditoriums in the world. An extra eleven hundred people can be seated in the orchestra, bringing the total capacity to well over 9,000.

It is principally hired for orchestral, instrumental, and vocal concerts, although political conventions, boxing contests, and other large-scale performances are occasionally staged there during the year.

To the south of Kensington is Chelsea, an old-world community still enveloped in the mellow atmosphere, traditions, styles, and ways of living of the Eighteenth and Nineteenth centuries. Well worth a visit, it is the favorite haunt of many American tourists.

It is perhaps best known today for its Chelsea Royal Hospital, a home

for old and invalid soldiers. The hospital, once a theological college, was made over by Wren at the order of Charles II, who was greatly influenced in so doing by his mistress, Nell Gwynne.

Chelsea's past is linked with English literature, for here lived at one time or another Dean Swift, Addison and Steele, Smollett, Leigh Hunt, Thomas Carlyle, Rossetti, George Eliot, and other masters of the quill pen and the stately, measured phrase. Newton, the scientist, and Whistler, the artist, also were residents of this district.

Regent's Hall

A long hop north past Oxford Street into Marylebone brings us to Regent's Park, home of London's zoo. In the latter is the largest aquarium in the world, with a collection of more than 3,000 fish, reptiles, and other marine animals.

Monkey Hill has all the comforts of home. When the weather is cold the caves are heated by a central system, and when the sun ducks from view for any length of time the monkeys are provided with ultra-violet "artificial sunlight" to keep them happy and rollicking.

Headquarters for English cricket, Lord's Cricket Ground, is not far northwest of Regent's Park. The gateway at the entrance is a memorial to W. G. Grace, who in his day was the Ty Cobb of cricket.

Oxford Street is the main drag between western London and the City. Its heavy, constant stream of traffic makes it one of the busiest streets in the whole kingdom. Burrowing underneath is the Central London Railway; and the station below Oxford Circus at the intersection of Regent Street is crowded by 50,000,000 passengers during the year.

Around the Circus are several of London's biggest department stores, among them the huge, colonnaded establishment of the Marshall-Field-trained American, Selfridge, which provides a most fruitful study in merchandising methods for anyone interested in that sort of thing.

Baker Street, fictitious home of super-sleuth Sherlock Holmes, connects Oxford Street with Marylebone Road just below Regent's Park. It is lined today with the salons of London's leading photographers. Just to the east on Marylebone Road is Madame Tussaud's waxworks museum.

Mayfair

Mayfair, heart of London's high society goings-on, is bounded by Park Lane, Bond Street, Oxford Street, and Piccadilly. Anything that smacks of wealthy confabulation is automatically associated with Mayfair, for it is in this physically drab but glamorous neighborhood that those upper-crust Londoners live whose activities are fully reported in the newspapers so that the millions of "commoners" may read about them with questionable gusto.

The two main sub-centers of Mayfair are Grosvenor Square and Berkeley Square, both of which are undergoing transformations in character and content. They seem destined to lose their place as social hubs, as have St. James's Square, Russell Square, Lincoln's Inn Fields, and Covent Garden before them.

The West End, however, probably is fated to continue to be the better class residential district of London, even though it is still edging gingerly away from the center of the city. Besides Mayfair, the West End has a few other distinguished districts, notably St. James's and Belgravia.

Bachelor Hangout

St. James's is best noted for its clubs. It is almost exclusively a bachelors' settlement. St. James's (Continued on Page 12, Column 1)

The Fog Lifts over Piccadilly



These three snapshots of Piccadilly at night give a rough idea of what fog does to the aspect of London. When the fog lifted the center picture was taken.

the old church of St. Martin's-in-the-Fields, in which pews are reserved for the Royal Family.

Piccadilly Circus

A short hop northwest of Trafalgar Square is Piccadilly Circus, the meeting place of Piccadilly and Regent Street. It is one of the busiest traffic centers both on and below the ground in the whole city or anywhere in the world, for that matter. It was, to this writer, the most unflaggingly interesting spot in London. I saw everything there from a fight between two Cockney women to the squelching of a masher by Sylvia Sydney.

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Berkeley Street, which runs into

No Fauntleroy's



Pictures of Freddie Bartholomew and books like Little Lord Fauntleroy convey the impression that English boys are sissies. Oh, yeah? Look at this pair!

There Is Dancing on the Streets



London beggars play for their suppers. The number of mendicant street musicians is fairly high. This octogenarian song-and-dance team is spry enough for any variety theater.

SELLING ELECTRIC RANGES

Utility's Trial Range Plan Brings Electric Cooking's Benefits to Low-Income Families

By T. T. Quinn

CHICAGO—A "step-by-step" plan of electrification which has resulted in the sale of 8,500 major appliances during the last three years was outlined to last week's fifth annual Edison Electric Institute meeting by Walter A. Forbush, vice president of Edison Electric Illuminating Co. of Brockton, Mass.

Chief elements in the plan, from a sales standpoint, are the use of the "district representative" salesmen by the utility itself, close cooperation with dealers in the territory in both sales and financing work, and an unwillingness to make the customer a better offer than dealers themselves will make.

The utility serves an area of about 300 square miles, and has 41,000 customers, 35,000 of these residential. Tradition and climatic conditions combine to favor the kitchen range for cooking, and a box outside the kitchen window for refrigeration, during most of the year.

SELLING BEGUN IN 1914

Merchandising was begun in 1914, with toasters, electric irons, and other minor appliances. First venture into the cooking field was made in 1926, when the company started selling bucket cookers; and it was not until 1930 that electric range sales were encouraged, after bucket sales had mounted to 2,600.

Before appliances could be sold on a large scale, however, adequate wiring was required in many homes, so as early as 1919 the company began financing home wiring on "easy terms," putting electric service into 18,000 homes between 1919 and 1929.

When it was decided to push actively electric ranges, Mr. Forbush said, the company first conducted tests of several installations made—some in a city well populated, and the others in a sparsely settled region. Results of the tests showed, he said, that active promotion would prove worthwhile.

DISTRICT REPRESENTATIVES

In its sales department, the company has 32 men of the "district representative" type—men who contact perhaps a thousand customers, reading meters, servicing appliances, selling, and collecting.

When this method was inaugurated in 1929, the men were not allowed to sell for a period of six months, being limited to learning their market and its potentialities. After this time, they were cautioned to sell only to those who could afford to buy—and since they had to do their own collecting, bad sales bounced back on them promptly and forcibly.

In addition, the utility has five regular specialty salesmen, cooperating with the district representatives in closing sales.

DEALER COOPERATION

To cooperate with dealers, who came into the field in increasing numbers as interest in major appliances rose, the utility organized the Brockton Electric Club, bringing together dealers "jealous of each other and of the utility," Mr. Forbush said. The club "precipitated arguments,

and almost fights," Mr. Forbush said, "but having brought them into the open and relieved pressure, it has continued to function with reasonable success. Most important, in our opinion, it has allowed us to know of dissatisfaction before it has become acute.

"Dealers have always claimed that the utility has sales advantages they could not meet," Mr. Forbush added. "Utility men, particularly if of the district representative type, have access to the customer that no dealer's salesman could possibly have.

"Again, instalment selling with payments included with the monthly utility bill are beyond the reach of any competitor. Finally, terms offered cannot be met by any dealer using finance companies or commercial banks.

"Our answer has been to give our district representative salesmen the same commission on a sale made by a dealer in his territory as on one that he himself makes of company merchandise. We carry paper and collect instalments on dealer sales with our regular energy bills, and maintain prices and terms the same as those offered by the dealer."

RANGE RENTAL PLAN

Turning from sales policies to actual sales campaigns, Mr. Forbush told of the company's trial rental plan on electric ranges, through which, he said, the appliances are being added to the power lines in ever increasing numbers.

The homes into which these ranges are going, he emphasized, are those of average industrial wage earners, where in most cases the average weekly wage is under \$20.

"Sales have been made by allowing the home operator to prove personally the satisfaction of electric cooking, and discover for herself the small additional cost when added to the electric service that has come to be considered essential under modern standards.

THREE MONTHS' TRIAL

"We give three months' free trial as a trade-in allowance for old equipment. This gets the old equipment out of the way and assures a minimum of three-months trial. During this period, the customer gets real experience with the electric

equipment and overcomes any difficulties that may arise from lack of knowledge in its operation. Thoroughly trained home service representatives work in the individual homes with each customer.

"If at the end of three months, there is still doubt, the tendency is to keep the appliance, as otherwise it is necessary to get other equipment with an outlay of cash or higher monthly payments.

"One present plan will install in the customer's home, without obligation to buy, either a range or water heater, with a monthly trial charge as low as four cents per day, for a range, and seven cents per day for a 50-gallon water heater. If the customer decides to return the appliance, he may do so at any time and simply lose the amount of his monthly trial payments.

"If during the first 12 months of the trial, he decides to buy a different model electric range, all trial payments are credited on the purchase price of the new range. At the end of 69 months, trial rental payments cease and the appliance becomes the property of the customer.

QUICK INSTALLATION

"A special discount is offered to the customer who converts the trial contract to a sale during the first 48 months of the period. Free service is given during the life of the contract. Reverts have been few and there is so great a demand for used ranges that there is usually a waiting list for turn-ins.

"Something less than half of the ranges put on the lines in the last two years have been installed under the trial rental plan and the tangible result has been to bring our present range saturation to 16.5%.

"We put real effort into speeding up the installation and, even though nearly every range sale entails some housewiring, quite regularly we have the range in and ready for use within 36 hours after the sale is made.

"We have given much thought and effort to water heating and believe that we are beginning to make progress. Two major barriers have been the year-around low temperature of our water, and the fact that because of water characteristics, we cannot use galvanized tanks in the territory. After careful study, we decided that with our conditions, the only type of water heating that could be justified economically was off-peak service.

WATER HEATER RATE

"We early set up a good off-peak rate and have lowered it until now it starts with one cent energy for the first 300 kwh. per month and follow on use at eight mills. Particularly, in the last year, we seem to be getting results and now have about 2.5% saturation. More than that, the installation, once made, is

staying sold and is selling the others.

"When we face home air conditioning, we very definitely face New England conservatism, or perhaps we might say stubbornness. New England weather has been talked about for years and the consensus seems to be that the only sure thing about it is uncertainty. We have no long continued periods of either hot or cold, dry or wet weather. If it is one thing today, you can be quite sure that tomorrow or next day, or certainly the day after, it will be the opposite.

"Consequently, the New Englander or all but a few exceptional individuals will rather stoically take what comes, grumbling of course, but content to wait for nature to change it. Of those who can afford air conditioning and might be interested, most have summer homes at nearby shore resorts.

"Through a few commercial installations and occasional room jobs, we are planting the seed and at every opportunity cultivating the growth. We are optimistic for the future, but are not unduly excited about the immediate prospects."

Electric Cooking Cheap, Boston Survey Shows

BOSTON—Low cost of using an electric range was shown in a recent survey by Boston Edison Co., in which 249 persons in 56 representative families were revealed as receiving the benefits of electric cooking for an average cost of 80 cents per person per month.

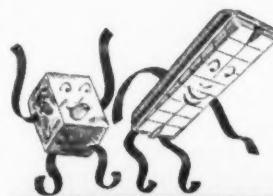
The survey included a listing of appliances used by each family. In the 56 families studied, 47 used an electric refrigerator. Every family had at least one radio set (there were 65 in the group), and all homes but one had a vacuum cleaner.

Thirty-seven had electric washers, only two electric water heating, 57 electric irons were in use, 47 families had electric percolators, and 55 had electric toasters.

Comparison of monthly service bills for a year before and a year after electric cooking was installed showed that total current consumption rose 24.1 kwh. per person per month. Average use of current per family was 100 kwh. before the electric range was installed; after installation, the figure rose to 207 kwh.

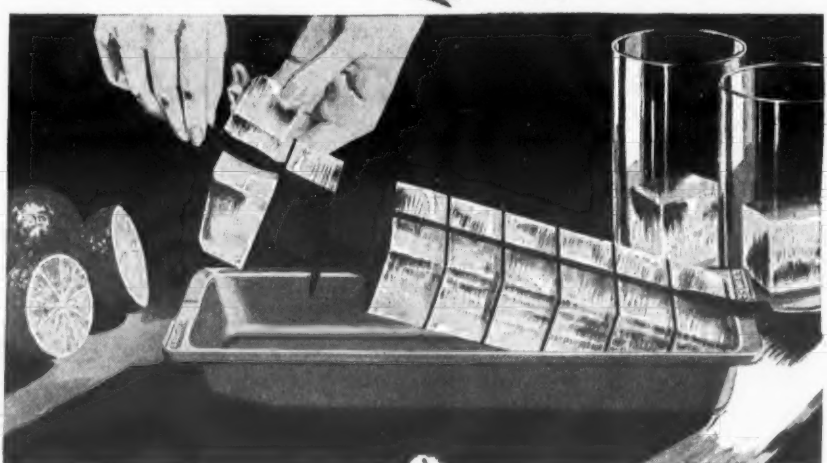
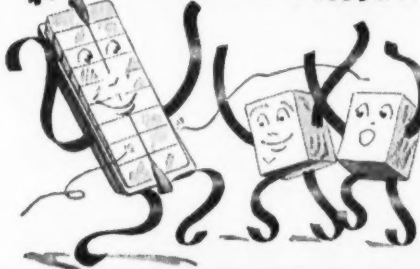
GET ACTION WITH

Presto Tray



Your salesmen will get action when they show prospects the utter simplicity with which Presto Tray gives them a flying start to a tall, cold drink. The Magic Finish Presto Tray of Patented* Contour slips out of the freezing compartment in a flash... without tugging and pulling. Then a slight pressure on its patented contour and out pops a rubber gridful of ice cubes... ready for use as needed... one or a dozen. No fuss or bother.

A 10-SECOND FINISH



Show 'Em and Sell 'Em

Cash in on the sales-making advantages of Presto Tray's flying start and ice cubes' 10-second trip from refrigerator to glass. Demonstrate how simply—surely—instantly this Magic Finish Presto Tray of Patented Contour gives ice cubes full-sized, cold and dry. Emphasize fast freezing... instant releasing... no wasted or melted cubes. And because Presto Tray's demonstration appeals to prospects, your salesmen get refrigerator orders easier. Insist that your new refrigerators come factory equipped with Presto Trays—which give all the advantages of a fast freezing metal tray plus all of the conveniences of a rubber grid.

THE
MAGIC FINISH
PATENTED CONTOUR

Presto Tray

WITH RUBBER GRID

ICE CUBES IN 10 SECONDS

*Patent Pending

INLAND MANUFACTURING DIVISION
General Motors Corporation, Dayton, Ohio.



More and more women are looking at the gleaming white refrigerator on the sales floor, and saying: "Yes, it looks lovely—but how long will it stay that way?"

Don't make the mistake of finishing your refrigerator in anything that will soon become a reflection on your good manufacturing judgment. Use porcelain enamel throughout. It is the lifetime finish.



PORCELAIN ENAMEL INSTITUTE, INC.
612 North Michigan Avenue • Chicago

THE MASTERCRAFT ADJUSTABLE PAD AND CARRYING HARNESS FOR SAFE DELIVERY OF AUTOMATIC REFRIGERATORS

Pad and harness ADJUSTABLE to many sizes and styles of cabinets. Economical—Efficient. Sturdily constructed, easily applied. Name of refrigerator attractively lettered on pad without charge.



Pad (Adjustable) \$9.50 ea.

Harness (Adjustable) \$6.00 ea.

The Pad and Harness are separate.

Individual carrying straps \$1.75 each and up. Write for 1937 Folder & Prices on entire Pad Line.

BEARSE MANUFACTURING CO.
2815-2825 Cortland Street, Chicago, Illinois

The English Like Their Cigarettes



Only an Englishman could like English cigarettes, which sear the tonsils right out of an American. Oddly enough, they are made entirely of American tobacco, whereas ours are blends of American and Turkish leaf. Cigarette consumption in London is enormous.

(Continued from Page 10, Column 5) Square, its heart, has become the world's masculine fashion center. The outfits designed by and for the wealthy, reserved bachelors who whisky-and-soda in St. James's clubs become the vogue throughout Europe and America.

Nothing eccentric or cheap can be found in the shops and homes of St. James's. Nothing but the best—and it must be conservative and in good taste. Magnificent Chippendale furniture is to be found in many of the bachelors' quarters, along with Chelsea china, Queen Anne silver, Chinese porcelain, paintings by Reynolds and Gainsborough, and other genuine treasures. St. James's is the *sine qua non* of cultured, celibate, and envied masculinity.

Belgravia, on the other side of Green Park from James's, is built around Belgrave Square. It is an aristocratic residential section conceived and executed on the grand scale.

An ex-center of gayety is the Strand, one-time riverside drive of London, now pushed back into the city by the Embankment. The theaters and restaurants that used to cry for attention in the Strand have been replaced by shops and Dominion houses. Of the grand palaces that once stood on the river side of the avenue only Somerset House remains. One end of the Strand leads into Trafalgar Square, while the other passes old Temple Bar to become Fleet Street.

Just off the Strand is Strand Lane where there is a genuine relic of old London. It is a Roman Bath, fifteen

and a half feet long, six and a half feet wide, and five feet deep. It is kept constantly filled by a flow of spring water from a hidden well that has been running without a break or a service call since 'way back before Caesar first landed in the country.

Depressing East End

Over in the East End of London you will see a kind of life that many Londoners prefer not to think of—a bare, barren human existence among the poorer districts and around the docks which is most depressing. The East End is the section that the West End tries to shrug off with a sniff—the poor relation, in other words.

The East End begins where the City is sharply cut off—at Aldgate. It is at the same time one of the most mysterious and one of the most uninteresting places on earth. It is really mean-looking, because almost all of its buildings are low, squat, and begrimed with age. Apart from the main streets, however, it seems to be nothing more than a maze of alleys chuck full of characterless masses of brick houses.

There is a preponderance of the foreign element, here, predominantly Jewish, who adore the life, light, bustle, and noise of their Whitechapel Road, and flock to it in droves on Saturday nights.

London's Ghetto is the district around Petticoat Lane, in Whitechapel. On Sundays the place is in an uproar as is an uproar, for Sunday, believe it or not, is market day. Older inhabitants of the district are

usually attired in the native habiliment of Russia or Poland, while the younger members of the community are flashily decked out in cheap styles which will make your ears ring.

Toynbee Hall

Right in the heart of this district is the "mother" of settlement houses, Toynbee Hall, founded 52 years ago by Samuel Barnett, Vicar of St. Jude's in Whitechapel, who thought it is as good a way as any to follow the footsteps of Christ among the East Side unfortunates. There are three main ends toward which Toynbee Hall and its staff work: guiding and accelerating the physical and mental development of the children, improving the housing and home conditions of the poor families, and encouraging the establishment of similar institutions throughout the world.

There are in the United States more than 700 such welfare stations (best known of which is Chicago's Hull House), and every year a delegation of men and women engaged in social welfare work in America spends a month at Toynbee Hall studying the methods of operation, checking the results upon the beneficiaries, and engaging in round-table discussions.

Lifeblood of the Empire

Dockland is to the south of the East End, lining both sides of the Thames from Tower Bridge all the way downstream to Barking Reach. In all there are well over 45 miles of docks and wharfs, and all are in use, for London is the busiest and most active port in the world.

A third of the whole kingdom's imports and more than a fourth of its exports are loaded and unloaded at the port of London.

On the north bank nearest the Tower Bridge are the St. Katharine Docks, at which are handled tea, marble, spices, and the like.

Adjoining them on the east are the London Docks, with a warehouse capable of storing about a quarter of a million tons of goods. Wine, rubber, wool, ivory, canned goods, spices, etc., comprise most of the cargoes taken in and shipped out. The gangways in the wine vaults of the London Docks are about 30 miles long.

Just past these docks the Thames makes a sharp bend to the south into Limehouse Reach. On the promontory of the south bank formed by this hairpin turn are the Surrey Commercial Docks, a complete mass of docks and pools having a total area of over 460 acres. The goods chiefly handled here are timber, grain, and most of the imported Canadian produce.

Past Limehouse Reach the river again makes a hairpin bend, this time to the north; and in the resultant peninsula, known as the Isle of Dogs, are the West India Docks, the South Dock, the Millwall Docks, and numerous other docks and basins of smaller size and less importance.

The two West India Docks, one for imports, the other for exports, occupy an area of 240 acres. London's finest granary is located at the Millwall Dock, yet its seemingly enormous capacity of 24,000 tons is but a week's rations for the eight millions who live in the Metropolis of the World.

Ships arriving from South Africa and the American Continent put in at East India Docks, just north of Blackwall Reach.

Most of the big trans-Atlantic passenger liners, however, dock at Southampton.

Dockland and Limehouse

Huge warehouses to store the cargoes of grain, tobacco, and frozen meat from Australia, New Zealand, and South America line the Royal Victoria and Royal Albert Docks just inland from Woolwich Reach.

These two docks, with the new King George V Dock adjacent, are the furthest (within the municipal boundaries) away from the center of the city.

The docks nearest the mouth of the Thames are the Tilbury Docks, 20 miles downriver from the city. Their chief employment is in the unloading of perishables. From there the latter can be more rapidly transported to the London markets.

Port of London Authority, which governs all the activities of the city's many docks, plans to develop Tilbury Docks into a passenger base by the construction of a floating quay, such as is used in Liverpool.

At present most of the cargoes

The Feed Bag in Soho



Life is leisurely—but exciting at times—in the Soho district of London.

brought to Tilbury come from Australia and the Orient.

Unsavoury and squalid, indeed, is the immediate vicinity of dockland. Typical example of the mean neighborhood is Limehouse, London's Chinatown, on the north side of the bend between the Pool and Limehouse Reach.

Usually associated with romantic adventures, mysterious characters, and nefarious activities of Chinese master-villains from Fu Manchu down to the 'umblent quoter of Confucius, Limehouse is one of the most repellent sections of the whole city.

Heathen Chinees

Its inhabitants are of the lowest class of Chinese, both mentally and morally, and their lives seem to be a continuous routine of getting odd jobs around the docks, squandering their earnings in an opiate siesta or in gambling, and sitting around in their so-called "homes" until the next odd job comes along.

Words to the song "Limehouse Blues" are misleading, for there seems to be no color at all connected with any phase of Limehouse life.

However, the Chinese don't have exclusive residential rights to the place. There are some native Londoners living there, along with a sprinkling of foreigners from the freighters.

South of the Thames lies a portion of London almost entirely devoid of anything interesting to the sightseer. The area nearest the river is for the most part industrial; and that further to the south hardly more than a huge, plain, middle-class residential section where sleep the thousands upon thousands of men and women who daily trek to the City to join forces with the equally enormous army of clericals from the north end of London.

Battersea Park, on the south bank of the Thames opposite Chelsea, is South London's main public park. Two of its features are a fairly large lake and the subtropical garden.

Scattered over the rest of South London are many other parks and commons, the main ones being Clapham Common, Tooting Common, Peckham Rye, Wandsworth Common,

Brockwell Park, and Dulwich Park.

The focal point of the government of the county of London is the London County Hall, a stately building right next to Westminster Bridge at the Surrey side. It was formally opened in 1922 by King George V.

Center of gaiety here is the Elephant and Castle, an intersection of five main roads, where there are in abundance pubs, theaters, shops, markets, and noisy throngs of good-natured, middle-class people—not all of them absolutely sober, but few of them in their cups.

In Southwark is St. Saviour's Cathedral, where John Harvard, founder of the American university, was baptized in 1607. Near the church once stood Shakespeare's Globe Theater.

Canterbury Pilgrims

Another historical recollection of Southwark has to do with the Canterbury pilgrims of whom Chaucer wrote so much. They were wont to assemble at the old Tabard Inn, the site of which is opposite Southwark Town Hall, and from there they set out on their journeys down to the cathedral at Canterbury.

The Archbishops of Canterbury have for the last seven centuries been granted the use of Lambeth Palace, not far from the Elephant and Castle, as their London residence.

Nine miles south of the Thames is Croydon, London's main airport and center of England's civilian and commercial aviation activities.

About ten miles west of Croydon is Hampton Court Palace, the largest and one of the finest of England's palaces. In this building are almost a thousand apartments, most of them occupied by royal pensioners, guests of the royal family, and other persons standing in good favor with "the quality."

Cardinal Wolsey built this mansion for his own private home, but he was practically forced to "present" it to Henry VIII, who took a great fancy to it.

In its extensive gardens is the famous Hampton Court Maze, that baffling arrangement of hedges in (Concluded on Page 14, Column 4)

Young Man of London



With his police dog, his Saville Row lounge suit, and his air of assurance, this Young Man of London typifies the bachelor-about-town.

Fun on Brighton Beach



Favorite seaside resort of many Londoners is Brighton, the Atlantic City of England. The beach is pebbled, rather than sandy.

Buhl to Distribute Carrier Coolers in Eastern Michigan

DETROIT—Buhl Sons Co. has been appointed distributor in eastern Michigan for the Carrier line of portable summer air conditioners, according to C. W. Strawn, manager of Buhl's major appliance division.

To promote this new line, Buhl's sponsored an open house Monday and Tuesday, June 7 and 8, for major appliance and plumbing and heating dealers in its territory. Representatives from Buhl Sons and from Carrier Corp. discussed sales methods, merchandising problems, and advertising plans with visiting dealers. These conferences were held in a special office in the downtown Buhl building which has been equipped with one of the Carrier portable units.

Mr. Strawn explained that this office will be maintained throughout the summer season, at least, as a display room where dealers may bring prospects to demonstrate appearance and operation of the unit in normal office surroundings.

Under present arrangements, Buhl's will handle delivery, installation, and service in the Detroit area through its regular refrigeration department. Mr. Strawn asserted, however, that a separate department would be set up to handle this work as soon as the volume of business necessitated such action.

Mr. Strawn also said that dealers may sell the Carrier units under a C.I.T. finance plan providing for a 10% down payment with the balance payable over a three-year period.

First dealer to be franchised by Buhl Sons was J. L. Hudson Co., local department store.

J. B. Ogden, buyer for Hudson's electrical appliance department, said that the store would handle the conditioners through its regular appliance department, and that one of the units would be placed in operation on the appliance sales floor.

Advertising and promotion of the new line will also be through ordinary channels, Mr. Ogden explained, with emphasis being placed on the fact that many floors of the Hudson store are conditioned by Carrier equipment.

11 Long Beach Dealers Cooperate on Promotion

LONG BEACH, Calif. — Eleven Long Beach dealers cooperated in promoting new refrigerator models on May 19 through a special section in the local press.

News stories pointed out the benefits of mechanical refrigeration and stressed features of individual models, tying in with dealers' advertisements.

Dealers cooperating were:

Barker Bros. (Invisible); Buf-fum's (Frigidaire); Dean & Hoffman (Frigidaire); Humphreys (Westinghouse); Imperial Hardware Co. (Norge); McCrery Music Co. (Electrolux); Clarence Mills Electric Co. (Stewart-Warner); Sprong's (General Electric); Stricklin's (Kelvinator); Union Appliances (Gibson); Ward Bros. Radio Co. (Hotpoint).

Vern Wenger Co. Moves Portland Store

PORTLAND, Ore.—Vern L. Wenger Co., local dealer of electrical equipment for over 25 years, has moved to larger quarters in the Panama building, where it will occupy a portion of the ground floor and basement.

Mr. Wenger plans to place his repair and service department on the main floor so that customers may more readily talk directly to the technical men, and thus get better results.

Crosley Radio Line for 1938 Is Presented to District Managers

CINCINNATI — Twenty Crosley district managers from all parts of the United States met here May 27 and 28 in the studios of radio station WLW to view first units of Crosley's 1938 line of radios.

Thomas W. Berger, general sales manager, was in charge of the meeting. He was assisted by Neil Bauer, assistant sales manager; G. Earle Walker, merchandise manager; and Glenn H. Corbett, advertising manager.

Following the meeting, district managers left for the territories of their various distributors, where they will direct meetings to introduce the new line to dealers.

Production on the new receivers started May 24, according to Mr. Berger.

Kansas City Outlet Opens Display Hall

KANSAS CITY—Kelvin Hall, a special auditorium for the sale, display, and demonstration of major household appliances, was recently opened by Richards & Conover Hardware Co., Kelvinator distributor in this territory.

The room is air conditioned by a three-ton Kelvin unit, is lined with "Insulite," and has an independent heating system. A display of Kelvinator products is ranged around the walls, and a model electric kitchen is permanently arranged on the stage.

Norman Wilson, personnel director of the company, will conduct dealer meetings and sales training classes in the hall.

Refrigeration, Conditioning Show in Allentown

ALLENTOWN, Pa. — Displays of mechanical refrigerators and air-conditioning equipment by nine dealers played an important part in the Allentown National Home show which opened in the Mealey auditorium here May 24.

Participating dealers in the refrigeration and air-conditioning fields were:

Allen Electric Co., Allentown-Bethlehem Gas Co., Automatic Heating Co., J. P. Bomgardner, Cresse Home Appliances, Electric Kitchen Modernizing Bureau of Lehigh Valley, Lopez Music House, Pennsylvania Power & Light Co., Robert E. Ritter & Sons.

Century Moves New York Office to Larger Quarters

NEW YORK CITY—The New York City office of Century Electric Co. is being moved to larger quarters in the Underwood Bldg., 30 Vesey St. James Larkin is district sales manager.

Decatur Dealer Cooperates in Cooking School

DECATUR, Ill.—Emerson Piano House, Frigidaire dealer, cooperated in the cooking school conducted by the Decatur Herald-Review from May 4 to 7.

REFRIGERATION QUALITY ISO-BUTANE IN 100 LB. CYLINDERS

Available for prompt shipment from our large warehouse stock.

WRITE OR WIRE US FOR OUR LOW NET F.O.B. PRICES

CONSERVATIVE GAS CORP.
1084 BEDFORD AVE. BROOKLYN, N.Y.

Apex Sales Increase 34% in 4 Months

CLEVELAND—Gross sales of Apex appliances for the first four months of 1937 are 34% ahead of those for the same period of 1936, according to C. G. Frantz, president of Apex Electrical Mfg. Co.

April broke all records in both manufacture and sale of Apex appliances, said Mr. Frantz, sales alone showing a gain of 51.8% over April, 1936.

Apex's roster of employees increased 48.9% from Dec. 31, 1936, to April 30, 1937, Mr. Frantz said.

Kelvin Home Being Built In Indianapolis

INDIANAPOLIS—First local Kelvin Home is being constructed at 5515 Kenwood Ave. under the sponsorship of the Meier Electric & Machine Co. and with the cooperation of the Indianapolis Power & Light Co. Roy P. Meyer is in charge of the project, completion of which is planned for June 15, when public inspection will be invited.

North Dakota Firm Takes On Fairbanks-Morse Line

MINOT, N. D.—Motor Service Co. has taken over distribution of Fairbanks-Morse refrigerators and washing machines in northwestern North Dakota. Harry Eck is manager.

8 Radio Distributors Appointed by Grunow

CHICAGO—Appointment of eight new Grunow radio distributors has been announced by Harry Alter, sales manager of General Household Utilities Co.

Names and locations of these distributors follow:

Moore, Bird & Co., Denver; Lew Bonn Co., Minneapolis; Mericope Appliance Co., New Orleans; Charles Hifeld Co., Albuquerque, N.M.; V. Tausche Hardware Co., LaCrosse, Wis.; Passman Equipment Co., Monroe, La.; Arizona Hardware Co., Phoenix, Ariz.; Majestic Sales Co., Sioux Falls, S.D.

New Norge Dealer Opens In Auburn, Washington

AUBURN, Wash.—A new Norge Co. store, handling Norge refrigerators, air-conditioning equipment, and other appliances, has been opened here by Kenneth Fish. The store will be managed by Lief Larson.

Mr. Fish recently opened a similar store in nearby Renton, Wash.

Consolidated Mills Named Crosley Distributor

BIRMINGHAM, Ala.—Consolidated Mills Co., affiliated with Alabama Dry Goods Co., has been appointed Crosley distributor in northern Alabama.

Refrigerators will be the first Crosley product to be pushed extensively, according to Seymour Kronenberg of the distributorship.

28 Air Conditioners Installed in 4 Mos. By Alabama Dealers

BIRMINGHAM, Ala.—More connected air-conditioning load was added to the lines of Alabama Power Co. in the first four months of this year than had previously existed in the company's territory, according to a report made by H. C. Gause, the utility's air-conditioning engineer.

During the four-month period of 1937, 28 installations employing a total of 1,790 hp. have been made in Alabama Power Co. territory. Previous to 1937, only 73 installations employing a total of 1,601 hp. existed in this territory.

Mr. Gause attributed this gain directly to the program of air-conditioning development which the utility has been sponsoring since 1933. At the outset of this campaign there were only 5 installations, employing a total of 762 hp., in the utility's territory.

L. O. D'Olive, power representative of the Mobile division, has been responsible for air conditioning every movie theater in Mobile, and has sold the state's largest installation—a 575-hp. job in the First National Bank of Mobile. His activity resulted in 12 installations, totaling 955 hp., during the first four months of 1937.

New Bridgeport Crosley Dealer

BRIDGEPORT, Conn.—Electric Service Co., Crosley dealer, has been opened here. W. H. Griffin is owner.

PIONEERS

Side by side with those whose engineering skill has contributed

to the development of the electric refrigeration industry since the days when it was hardly more than an experiment, Ansul has striven for perfection in the quality of their refrigerants. First to lower the moisture content of sulphur dioxide to the percentage required for successful refrigeration, Ansul pioneered likewise in the production of a product uniform in quality and free from foreign material and impurities; was first to insure satisfaction through individual analysis of each cylinder before it leaves the plant. When it was introduced, Ansul Methyl Chloride received a spontaneous acceptance because of this background of controlled quality. It is this record of research and achievement to which may be attributed the confidence shown throughout the refrigeration industry in the reliability and efficiency of Ansul refrigerants.

ANSUL

SULPHUR DIOXIDE METHYL CHLORIDE

ANSUL CHEMICAL COMPANY - MARINETTE, WISCONSIN

USE **DRIERITE** FOR DRYING

Write for Literature and Quotations
W. A. HAMMOND, YELLOW SPRINGS, OHIO

SOLIDS-LIQUIDS-GASES-SOLIDS-LIQUIDS-GASES-SOLIDS
LIQUIDS-GASES-SOLIDS-LIQUIDS-GASES-SOLIDS
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Air Refrigerants Industrial Gases

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Teeth for Dealer Association Codes

ONE of the most promising developments in specialty appliance merchandising during the last few years has been the rise of dealer associations. As has been the case with so many other advances in specialty merchandising of the last decade, refrigeration sales organizations have led the way.

Because of legal restrictions, manufacturers have been hard put to it to find ways and means of controlling the resale of their products. And to the manufacturer of a specialty appliance, a measure of uniformity in sales practices and the maintenance of retail prices is an essential in supporting the morale of far-flung specialty selling organizations.

Chiseling Cuts Specialty Dealer's Effectiveness

After the third or fourth time a hard-working dealer has patiently cultivated a prospect, and led him or her to the buying point—only to have a chiseler enter the picture and steal that prospect through a price slash, a special discount, a rebate, or a trade for a used kitchen sink—that dealer is apt to adopt a what-the-hell attitude toward appliance selling.

Sometimes he gives up the franchise. More often he simply relaxes, and takes the easy-to-get business. Occasionally he becomes a chiseler, too. In any event, his effectiveness as a specialty dealer is lessened, or lost altogether.

But the fact remains that specialty appliance selling is a good business, if it's done right. And commendably large numbers of dealers have banded together in various cities to see what can be done about straightening out bad situations.

Biggest problem of these dealer associations has been that of putting "teeth" into the enforcement of their codes.

At first their only method of control was that of moral force. Having banded together in a club, the dealers learned to respect and even to like one another. And having labored together over the writing of a code of fair practices, they took a certain pride in that code, and in its enforcement. To violate the code was tantamount to losing the respect of their fellow club members.

This device has worked pretty well.

Non-Member Dealers Cause Breakdown of Codes

However, there has always been a certain element that has remained outside the jurisdiction of dealer associations. Composed in small part of recalcitrant dealers who have refused to align themselves with brother dealers, and in large part consisting of "floating" dealers (big merchandising outlets who put on special sales of job-lot refrigerators, contractors and purchasing agents who get discounts on quantity orders and then sell a few extra boxes to friends, and new dealers of questionable standing who are appointed by distributors' representatives over-anxious to make a showing), these outside-the-pale dealers have caused headache after headache to the dealer associations.

Within the last year, though, the dealer associations have begun to feel their strength. They have gone to distributors and said:

"Look. We're trying to run this business on a legitimate basis. It is upon dealers like us that you depend to push your products, to give them the promotion you ask for, to cultivate your territory thoroughly. We are cooperating with you. We expect you to cooperate with us.

"A certain so-and-so on Main Street is advertising your refrigerators, or your washers, at a special discount. We don't think he should be allowed to get any more of the brand you handle—even if he has bootlegged them in from elsewhere.

"Furthermore, we have positive information that the purchasing agent of the Blank company has been supplying his relatives and neighbors with your boxes. That's got to stop, too."

Get Assistance from Better Business Bureau

And the distributor generally falls into line. Frequently the head of the distributorship hasn't known anything about these "leaks," and is glad to get the information. In any event, he can't afford to alienate the affections of so many good customers.

Still another method of cleaning up dirty competitive situations is to enlist the aid of newspaper advertising departments and Better Business Bureaus.

In this connection, the Better Business Bureau advertising code for household appliance merchandisers, as formulated and promulgated by the live Detroit Appliance Dealers Association, is a model well worth the study of other associations throughout the land.

Provisions of the Detroit Better Business Bureau's revised recommendation for appliance advertising follow:

"1. As provided under City Ordinance No. 706 A, Sec. 2., all dealers offering radios, refrigerators, washers, or other electrical appliances through classified advertising must clearly identify themselves as dealers by signing their business name to the advertisement.

"2. The year of model shall be stated in advertising, when other than current model appliances are offered, and used merchandise shall be clearly designated as such.

Provision Dealing with Trade-In Allowance

"3. Trade-in allowances shall not be fixed or arbitrary, but shall reflect their bona fide nature by clearly specifying that the amount of allowance depends upon condition and model.

"4. When a price is quoted on a refrigerator, the cubic foot capacity of that refrigerator shall be stated.

"5. If several brand names are mentioned in an advertisement, no 'bottom' price shall be featured which does not apply to all brands listed. Example: '1936 model Frigidaire, Grunow, Leonard, Crosley, \$39.50 and up.' The 'bottom' price of \$39.50 shall not be used unless 1936 models in each brand are available at that figure.

"6. The actual price of illustrated models shall be clearly and prominently stated in immediate conjunction therewith.

"7. No brand name or special sale price shall be advertised unless reasonable stocks of the featured item are on display and readily available to purchasers.

"8. Published claims alleging savings shall in every instance specify the exact selling price of the merchandise."

Newspapers Reject Copy Not Meeting Standards

Detroit newspaper advertising departments are now rejecting advertisements which fail to measure up to these standards.

Dealer associations in Wisconsin (headquarters in Milwaukee), in San Francisco, Kansas City, Brooklyn, Philadelphia, Cleveland, Cincinnati, and Birmingham are among the leaders in advancing the cause of clean appliance distribution.

In numerous smaller cities, where the problem of control is not so complicated, rapid strides have been made toward making the merchandising of electric refrigerators and companion products a progressive business with profits for all.

At present, all of these associations are doing plenty of collective brow-furrowing on the problem of trade-ins. San Francisco seems to have solved the dilemma satisfactorily. Other cities are groping toward solutions. If they can keep trade-ins from getting out-of-hand they will have justified their existence, even if they succeed in doing little else; for the trade-in business threatens to become one of the refrigeration industry's chief worries in years to come.

The present age seems to be one of government by organized minorities. Much as many of us may deplore the tendency—especially in the political sphere—it would seem that those groups which can organize may find it necessary to do so sheerly out of self-protection.

In union there is strength.

Around the World

(Concluded from Page 12, Column 5) which so many visitors lose themselves.

Other rulers of England besides much-wed Henry who lived in Hampton Court Palace were James I, Charles I, Cromwell, Charles II, James II, William III, George I, George II.

Not since the latter died has a British monarch resided in the palace. A possible reason is the so-called "haunted gallery," where walks the ghost of Catherine Howard, the second of Henry VIII's wives to be decapitated—if you believe the guides.

About 20 miles upriver is imposing Windsor Castle, home of the Royal Family of Windsor, founded back in the eleventh century by William the Conqueror. A rambling collection of buildings almost a mile in circumference, the castle commands a sweeping view of the Thames, the village of Windsor below, and the surrounding countryside.

In St. George's Chapel, begun by Edward IV and completed by Henry VIII, are interred George III, George IV, William IV, Edward VII, Queen Alexandra, George V, and others of British royalty. Queen Victoria and Prince Albert lie together in the Royal Mausoleum in the castle grounds.

On the other side of the Thames is Eton College, founded in 1440 by Henry VI. Top-hatted little boys in sissy collars walk in dignity here.

Just beyond the northern boundary of London is Elstree, once a sleepy little village, but now the new home of Britain's motion picture industry. Three of England's largest producing companies are located here: London Films Ltd., British International Productions Ltd., and London Imperial Ltd.

Most of the actual shooting has to be done indoors in the large studios, which are insulated against fog. Even before the advent of sound, producers found it too much of a gamble with the weather to try to photograph the actual play outdoors, although scenery shots are frequently taken in the surrounding country.

LETTERS

First Directory Section to Appear in June 23 Issue

The Hoover Company
General Offices and Factory:
North Canton, Ohio
June 4, 1937

Editor:

We have been carefully reviewing each recent issue of AIR CONDITIONING AND REFRIGERATION NEWS in order to secure information as to when the 1937 Edition of ELECTRICAL REFRIGERATION NEWS AND MARKET DATA BOOK will be available.

Failure has been the result of our efforts up to the present and consequently are writing to you in order to determine when it will be possible to purchase a copy of this book.

Please notify us about the probable publication date and the cost of purchasing same.

DWIGHT MOODY,
Engineering Department.

Answer: We assume that you refer to the 1937 edition of the Refrigeration & Air Conditioning DIRECTORY. This book is now being compiled but we cannot state definitely just when it will be ready for delivery.

However, the first section of the 1937 Directory will be delivered to all subscribers as "Part 2" of the June 23 issue of the News.

This sample section of the Directory will be designated "The Comfort Cooling Guide" and will contain listings of all manufacturers of air-conditioning equipment which includes the cooling function.

If any manufacturers have not received our questionnaire forms or have failed to supply information and descriptive literature required to obtain free listings in the 1937 Directory, they should notify us immediately.

Referring to the MARKET DATA BOOK mentioned in the above letter, we have no plans for publishing a revised edition of the 1935 MARKET DATA BOOK this year. Our plan is to issue pamphlets containing sales statistics on various classes of equipment, and the results of market surveys, as such data is obtained. For example, we have just recently issued an 84-page booklet entitled "Air Conditioning Surveys" which gives detailed information on installations in 55 trading centers.

Interested in African Sales Outlet

Duro Metal Products Co.
2649-59 North Kildare Avenue
Chicago

May 18, 1937

Editor:

As subscribers to your REFRIGERATION NEWS we have been very closely following your "Around the World" articles, and the writer would like to add his opinion to that of undoubtedly many others that it certainly would be a real feature if your description of the trip around the world would be published in book form.

In the articles that appeared in the May 12th issue in connection with the Electrolux, Ltd. Sales Organization, we noted your statement that the United Africa Company sold a great many of their cabinets in West Africa. As manufacturers of Refrigeration Service Tools, we would be very keenly interested in getting the complete address of this African Sales Organization and wonder whether you can furnish us with these details.

W. THIESSEN,
Export Manager Automotive Division.
Answer: Write Nils Laurin, A. B. Electrolux, Stockholm, Sweden to obtain the address you are seeking.

Oil Burner Dealer

Enters Refrigeration

Marsden & Wasserman, Inc.
Wholesale Distributors of Heating Equipment

44 Hicks St., Hartford, Conn.

Sirs: Will you please consider this an order for one year's subscription to REFRIGERATION NEWS. Please forward it to the attention of the writer at the above address.

This firm is launching a program to establish themselves in the refrigeration and air-conditioning supply business with the writer, who was for a lengthy period connected with Merchant & Evans, Phila. and more recently with White & Shauger, Paterson, N. J., heading up this particular department.

Marsden & Wasserman, Inc. have long been established in the heating and oil burner supply business and enjoy a fine reputation in this territory.

We trust you will forward the News beginning with Wednesday's issue. We don't want to miss a single copy if we can help it.

JOSEPH SIMONS

Herman Nelson Spends \$13,762 in Magazines

The Herman Nelson Corp.
Moline, Ill.

June 2, 1937

Editor:

1. We are very much interested in an article which you published in the May 26 issue describing the 1936 advertising expenditures made by air conditioning manufacturers.

2. We thought you would be interested in knowing that The Herman Nelson Corp. expended \$13,762.00 during 1936 for national magazine advertising. This was spent as follows:

American Home	\$7,375.00
House Beautiful	2,090.00
House & Garden	2,400.00
Country Life	947.00
Town & Country	950.00

\$13,762.00

C. R. ANDERSON,
Advertising Manager.

Red Book Appreciated By Manufacturers

P. R. Mallory & Co., Inc.
Indianapolis, Ind.

May 28, 1937

Advertising Manager:

This is in reference to your letter of May 24th directed to Mr. Mallory in which you advised that you were sending us copy of your 1937 Master Catalog of Air Conditioning and Refrigeration.

The catalog has been received and is a very fine piece of work and we wish to thank you for sending us a copy.

G. V. PECK.

York Ice Machinery Corporation
York, Pennsylvania

May 29, 1937

Advertising Manager:

Thank you very much for sending us an advance copy of your 1937 MASTER CATALOG OF AIR CONDITIONING AND REFRIGERATION (The Red Book), which we find to be interesting.

J. L. ROSENMILLER, Manager.

NOTE: If you have made a request for the Red Book and have not yet received your copy, please do not feel slighted. Production of the Master Catalog involves considerable hand labor due to the rather elaborate method of binding and tab indexing. Books are being assembled and shipped in lots of 500 and it will take a few weeks to complete the delivery of the initial edition.

THE AIR AGE

BY F. O. JORDAN

A New Stunt for Cutting Cost & Size of Ducts

No mere picayune reduction, but a drastic 75% slash in costs and in space requirements of ducts for the air-conditioning system is a reality right now.

To the air-conditioning industry, the air-distribution system often is a "pain in the neck," as well as other places. Read the following reasons for pain and see if you agree with them.

DUCT PAINS

Reasons for duct "pains":

A. The duct system generally kills a lot of valuable space which is desirable for other purposes, and space costs money.

B. Ducts frequently ruin appearances, and attempting to improve appearances by treating or concealing ducts is expensive.

C. The added cost of the duct system makes air-conditioning sales more difficult.

D. The profit from the duct system goes to the sheet metal subcontractor who installs it, rather than to the air-conditioning manufacturer or even to his dealers. Granted that sheet metal men have to make a living, many air-conditioning dealers have experienced those ductwork "blues" after spending plenty of time and money laying out and selling an air-conditioning system only to find in the end that they had simply fixed up a nice job for some sheet metal concern at a much larger profit than the sale of the air-conditioning equipment brought.

E. The supervision required by the sheet metal contractor and the expense and worry resulting from his activities often causes more "grief" than all the rest of the job put together.

F. Frequently it is necessary to cut a building almost to pieces, even to the extent of nearly wrecking it, in order to install a system of big ducts. This feature of duct work sometimes makes air conditioning for a given existing building entirely out of the question.

G. Certain short-sighted "locals" sometimes refuse to permit the use of easily installed factory-made ducts and fittings, thus forestalling any attempt to cut costs by use of standardized prefabricated ducts, and so arresting public acceptance of air conditioning (especially residential air conditioning) with resultant hardship on the manufacturer's employees and upon sheet metal workers alike.

INCREASED COSTS

A ductwork "pain" common to manufacturers who cut air-conditioner prices in their honest effort to hasten growth of the industry by reducing consumer cost is particularly acute when they find their efforts nullified by such increased costs in the field.

Outside of that, there is very little fault to find with the duct system. The common method of sidestepping the duct system issue altogether is to air condition through the agency of room conditioners which obviate the necessity of ducts.

However, the room unit method has disadvantages in that the room unit takes up space (sometimes not available) within the room itself, while the distribution of motors and fans all over a building sometimes is objectionable largely because of the service angle.

Furthermore, if the refrigerating machinery is located remote, it is necessary to install a distribution system of refrigerant tubing throughout the building to all units, while if completely self-contained room units are used, condensing water lines and wastes must be run to each unit if condensers are water cooled, or condensing air openings must be provided through walls or

windows if air-cooled condensers are employed. In many cases it is desirable also to provide fresh air connections to all room units for ventilation purposes.

PAINLESS SOLUTION

An obviously happy and comparatively painless solution would be a method allowing the centralization of all mechanical parts and outside air connections in some suitable machinery room as permitted by use of the duct system, but avoiding most of the objections of conventional ductwork enumerated above as items "A" through "G."

One of the larger manufacturers of air-conditioning equipment has advised us that his engineers have made use of a system which accomplishes this happy solution.

The method is to draw all outside air required for ventilation through one "central system" air-supply unit, and distribute this primary air through a distribution system of small pipes to the various rooms.

Each room supply is provided with an air-conditioning coil so arranged that the primary air supplied through the duct system induces a flow of secondary air from the room, both primary and secondary air being circulated through the air-conditioning coil.

INDUCED CIRCULATION

Since the primary air which is supplied under pressure can induce about three times its volume of secondary air, it may readily be seen that the primary air duct need carry only 25% of the air necessary to circulate through the air-conditioning coil in order to enable it to do the required cooling and dehumidifying and to obtain proper air and temperature distribution over the conditioned space.

Obviously this method of air distribution permits the concentration of all mechanical parts at one central point and eliminates many of the objections to the conventional duct system because it permits the use of ducts of so much smaller size.

DUCTS USED

The duct system described consists of a simple plenum chamber or duct in the basement, or above a corridor ceiling, or in other convenient location, with branches of thin-walled steel tubing three to five inches in diameter, similar to the tubing in the common pneumatic conveyor system used in department stores and other places for transmission of cash, papers, etc.

The plenum duct may be very simple in form, while branches may lead off at practically any convenient angle, because airflow from the plenum does not depend upon velocities as in the ordinary "trunk" system," but depends upon the pressure maintained in the plenum.

NO RECIRCULATION

Since no air is recirculated back to the central fan, no system of recirculating ducts is necessary, suitable air-relief vents being provided from each room.

The main supply fan is very much reduced in size as compared to the system in which all circulated air is passed through the fan, although the fan must operate against higher pressures. Because of the simplicity and moderate size of the plenum duct, its fabrication cost is at a minimum, while the installation of the branch tubing is done by fitters, requires a minimum of cutting of construction to permit its installation, and is very easy to conceal.

Another variation of this system might be to eliminate the individual

Refrigeration PARTS & TOOLS

Bracket strips
Bracket adapters
Flange adapters
Clamps
Tee wrenches
Pinchoff tools
Flaring tools
Tube benders
Valve needles
Replacement shafts

Above is only partial list of parts and tools which we manufacture and sell thru legitimate jobbers.

Send for new catalog
Superb Metal Products Co.
6958 S. State St., Chicago

air-conditioning coils from the rooms, and replace them with one central air-conditioning coil located as convenient.

With this method, outside air could be passed through the coil and cooled to a low temperature in the quantities necessary to obtain the required cooling and dehumidifying effect. This low-temperature, low-humidity primary air could then be delivered through the air-distribution system described above to the rooms, where the proper induction fittings could be used to result in the mixing and circulation of the total air required for proper distribution.

This method would have the obvious disadvantage of requiring insulated ducts and lower suction pressures for the refrigerating equipment, but it would eliminate the necessity of an extensive refrigerant distribution system, because but one centrally located air-conditioning coil would be required.

It is interesting to note that the latest Carrier self-contained unit conditioners use induced circulation of air through the air-conditioning surfaces or coil. It is said the ratio of primary to total air circulated is about one to four, and that there is a considerable saving in fan cost over the arrangement in which all air passes through the fan, while the design is such that no undue noise results from the higher air pressures used.

Westinghouse Unit Installed In Baton Rouge Shop

BATON ROUGE, La.—A Westinghouse air-conditioning unit has been installed in Louisiana National Barber & Beauty Shop here.

Wilmington Firm Gets Gar Wood Agency

WILMINGTON, Del.—Howell Co. has been appointed distributor of Gar Wood heating and air-conditioning equipment in this tri-state (Delaware, Maryland, Virginia) peninsula area, according to Frank H. Dewey, general manager of Gar Wood's air-conditioning division.

Nathaniel W. Howell, owner of the new distributorship, formerly was proprietor of Diamond Burner Co., where he designed and manufactured the Super-Safety conversion oil burner. He has been in the oil burner business as manufacturer, dealer, and salesman, since 1922.

Minneapolis Group Names New Officers

MINNEAPOLIS — Minneapolis Warm Air Heating and Air Conditioning Association has elected the following officers: president, J. E. Waldron, Twin City Furnace Co.; vice president, H. K. Johnson, branch manager, air-conditioning division, Gar Wood Industries, Inc.; secretary, W. C. Kuehn, Kuehn Heating Co.; treasurer, John Kop, Mill City Furnace Co.

Swett Bros. Move to New & Larger Quarters

SPRINGFIELD, Mass. — Swett Brothers Heating & Appliance Co., Delco-Frigidaire heating and air-conditioning dealer, has moved to new larger quarters at 559 State St.

IT'S NEW McQUAY COMFORT MASTER



LOW BOY FLOOR TYPE COMFORT COOLER now in production—Dual purpose Comfort Cooler for offices, and homes. Can likewise be used for small table, telephone, books, etc. Priced very low. Write, wire, or phone for specifications.

WRITE for New Catalogs on McQUAY Unit Coolers, Comfort Coolers, Cabinet Concealed Radiation, Refrigeration Coils, Ice Cube Makers, Air Conditioning Coils, Blast Coils, Combination Heating and Cooling Units, Suspended and Floor Type Blower Coolers, Cabinet Floor Type Room Coolers, Etc.

McQUAY Inc.
MINNEAPOLIS MINNESOTA

SIMPLE AS



is for AIR CONDITIONING, America's booming industry! All time sales records smashed from Florida to California. And the field hardly scratched. Every new air conditioning installation means a good prospect next door or just across the street. Time you were getting your share of this rapidly expanding business!



is for BAKER, a famous name in mechanical cooling for over 30 years. A company that has pioneered the development of refrigeration and air conditioning equipment in over 54 countries of the world. A name that means quality manufacture, advance design, dependability and operating economy to any customer.



is for COMPLETE COVERAGE, and that means complete selling. Baker offers 77 models for Freon or Methyl Chloride—the most complete line of small and medium capacity units on the market. Baker distributors are ready to serve every refrigeration or air conditioning prospect—big or small—for with the Baker line they can fit every job exactly.

A limited number of excellent territories for Baker dealers are still open. Inquiries are invited from responsible parties.



BAKER

ICE MACHINE CO., INC.
1506 Evans St.
Omaha, Nebraska

BRANCH FACTORIES
Fort Worth
Los Angeles
Seattle

EASTERN SALES
New York

CENTRAL SALES
Chicago

Authority on Mechanical Cooling for over 30 Years

TEMPRITE
INSTANTANEOUS
BEER and WATER COOLERS
Detroit Michigan

How to Select and Install Air Conditioning Systems

By T. H. Mabley

CASE NO. 19 A Group Of Offices

Occasionally we have an air-conditioning problem to deal with which, because of certain definite circumstances, makes the use of small individual room-type floor-mounted conditioners imperative. These units have a universal application in small offices, rooms in a residence, hospital or hotel, or any other space that is small enough to require one or two such units.

In this case, however, we will have to employ a large number of these units in an area in which, off-hand, it would appear that a duct system and central conditioner would be more practical. A more thorough study of the physical details of the space under consideration will disclose the reasons that make the small-unit system almost essential.

The area to be conditioned is comprised of a few small offices and one large general office. The suite is located on an intermediate floor of a large office building, and is exposed on two sides; the other walls are partitions to adjacent offices or hallways. The greatest exposure is the glass on the longest side, which also happens to be the south side of the building.

DUCTS IMPOSSIBLE

Venetian blinds have already been installed to reduce the heat from the sun's rays. This particular suite of offices is finished with very elaborate furnishings, and ornamental walls and ceiling trim. If any ducts were to be installed, it would be necessary to reinstall ornamental cornices and rearrange other interior finishings, which would be a rather costly procedure.

This applies to the small offices and the large general office as well. Furthermore, individual units have a certain degree of mobility which permits them to be moved from one location to another more readily

than changing a duct-distribution system. This is a very desirable feature for an air-conditioning system in such cases as the one we are considering.

The small offices lend themselves readily to a multiple-unit installation, thus permitting a very good individual control arrangement for the rooms. For these foregoing reasons it definitely appears that the unit system should be used throughout the job, and further, since in the offices any wall units would look rather unsightly, we will plan to install the floor-type units.

SPACE ECONOMY

Some economy of space may be accomplished in various manners. In the general office, the radiators may be removed and these conditioning units installed so as not to require any more total area than the old bulky-type window radiators. In two of the small offices the unit conditioners may be fitted into the wood panel cabinet-type radiator enclosure.

The removal of the radiators not only conserves floor space, but permits a better control of the heating cycle and the addition of the humidification feature in a very simple manner.

In the installation of air-conditioning equipment we intend to provide a system to accomplish all the generally accepted functions of a complete year-around air-conditioning system.

We will endeavor to control the temperature within a range of 70° minimum in the wintertime and a maximum of 78° in the summertime. Likewise, we want to keep a relative humidity somewhat within a range of 20% minimum to 50% maximum.

We will provide adequate circulation, which shall include some regulation of the fresh air in the small offices in particular. Filtration will naturally be included to a limited extent, but this item is not so important as the others in this particular case.

Of course, all these performance requirements are based on certain design conditions for outside temperatures and humidities, as well as inside internal heat conditions.

LAYING OUT SYSTEM

With this preliminary knowledge of what we are setting out to do and just what our general limitations actually are, we can proceed with the layout of the system. In the general office we have radiators along

the outside wall. These will be removed and replaced by three standard unit floor-type air conditioners having in them a heating coil, a direct-expansion cooling coil, a humidifier of the spray type, and filters.

This model unit may have either a centrifugal-type blower, possibly of the dual-wheel design, or a propeller-type fan designed to handle approximately 400 c.f.m. through the resistance of the cooling coils, heating coils, and filters. In this latter case an especially designed propeller will have to be used, as the normal air-circulator fan is not designed to handle air against any static resistance.

Three other floor-mounted units will have to be used to handle the total cooling load of the general office. These additional units will be similar to the units along the outside wall, but will not include heating coils, as the heat output of the three units is more than sufficient to handle the maximum heat loss of the space.

Since the total heat gain in the general office is about 74,000 B.t.u., we must use six conditioners having a cooling load of 13,000 B.t.u. with air entering at 78° dry bulb and 50% relative humidity. The distribution of these six conditioning units in the conditioned space (as shown) will assure proper circulation for comfort. In this case we will circulate a total of 2,400 c.f.m. through the six units.

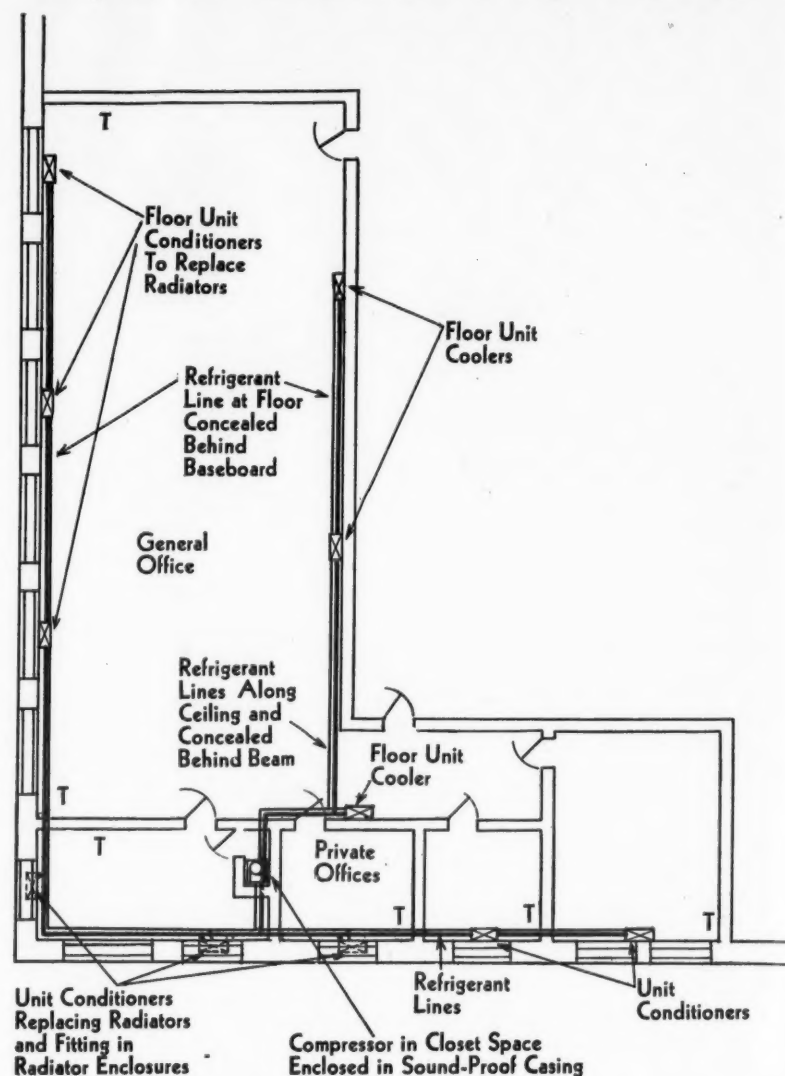
SMALLER OFFICES

We will treat the smaller offices in the same manner. In the large corner office with two exposures it will be necessary to use two units for both heating and cooling. These units will be provided, in addition to the standard equipment, with a fresh-air connection, which will be installed in the very lowest portion of the window opening, and concealed with the enclosure, which now is being used to encase the radiators in this room.

In this office and the one adjacent the radiators will be removed, and the units installed in the present enclosure. Care will have to be taken to select units that will fit into the present space without requiring any large amount of remodeling. In the other two offices we do not have radiator enclosures, so we must install the units standing free from the walls as we did in the general office in place of the radiators.

These units should also be equipped with fresh air intake connections,

Layout for Installation in Group of Offices



the purpose of which is to provide a means of disposing of the tobacco smoke at such times when the rooms will be used for conferences. All that we can do in such a case is dilute the air with a quantity of fresh air and diffuse the smoky air throughout the entire office suite.

The control of the system for heating may be accomplished by means of thermostats located in each

office (as shown) and controlling steam valves to each unit. In the general office, two thermostats will be used, located at either end of the exposed wall but on an inside partition. One thermostat will control two units and the other, just one conditioner.

It might be possible to simplify the control and use just two thermostats (Concluded on Page 17, Column 1)

For the Air-Conditioning Distributor-Contractor

This series of articles by T. H. Mabley, chief engineer of Mechanical Heat & Cold, Inc., Detroit air-conditioning distributor, is written for the use of the air-conditioning distributor and contractor in solving problems of equipment design and installation.

Case No. 18 which appears on this page discusses the methods for solving problems involved in making a year-around air-conditioning installation for a basement sales floor.

Compilation of Mr. Mabley's articles into a pamphlet for ready use by an air-conditioning contractor or dealer is being started by the News. Announcement will be made in the News as soon as these pamphlets are ready for distribution.

This series of case studies is entitled "How to Select and Install Air-Conditioning Equipment." Each study includes an illustration of the method of making the installation, and in some cases, tables to be used in figuring the load requirements or some other factor for the specific job.

In some instalments Mr. Mabley goes into considerable detail in explaining how the heat load calcula-

tions are actually figured, how the duct areas are estimated, how refrigerant lines are sized, etc.

The case studies which have appeared in AIR CONDITIONING AND REFRIGERATION NEWS are:

Case No. 1, A Single Office (Jan. 6); No. 2, A Conference Room (Jan. 13); No. 3, Residence System with Room Cabinets (Jan. 20); No. 4, Typical Commercial Application—A Shoe Store (Feb. 3); No. 5, A Beauty Parlor (Feb. 24); No. 6, A Coffee Shop (March 3); No. 7, A Process Job (March 10); No. 8, A Doctor's Suite (March 17); No. 9, Central System for a Group of Offices (March 31); No. 10, A Residence (April 7); No. 11, Upper Floor of a Residence (April 14); No. 12, A Men's Apparel Store (April 21); No. 13, A Women's Dress Shop (April 28); No. 14, A Restaurant and Cocktail Bar (May 5); No. 15, Complete System for a Residence (May 12); No. 16, An Auditorium or Theater (May 19); No. 17, Wing of a Factory (May 26); and No. 18, Basement of a Store (June 2).

Provide Ample Protection from

FUMES

The serviceman should always take along the

CESCO HEALTHGUARD FUME KIT



LEAKS of refrigerants may be encountered at any time. No man should work in these fumes, even though the concentration be light and the time brief. It is important to be ready for them. The HEALTHGUARD FUME KIT is handy to take along—light, compact and surprisingly comfortable to wear. Cartridges for methyl chloride, sulphur dioxide and ammonia. Write for literature.

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2352 Warren Blvd. CHICAGO, ILLINOIS



Buy From a National

SUPPLY JOBBBER



In no industry is the need for a supply jobber more pronounced than in the refrigeration industry. The supply jobber makes it possible for hundreds of manufacturers of parts and equipment to get complete distribution to the thousands of refrigeration service companies and dealers quickly and at low cost. The supply jobber has performed his function of buying from hundreds of manufacturers and selling to thousands of service and dealer organizations quietly and efficiently, keeping pace with the rapidly changing market conditions.

Only five short years ago service men had to contact several manufacturers or distributors for parts or supplies to permit them to install or service equipment. Loss of time, delays, manufacturer's policies and high prices made it almost impossible to do business at a profit. Efficient jobbers organizations have changed these conditions so that today it is possible for any legitimate service organization to purchase all their parts and supplies from a responsible jobber and secure immediate, out of stock, delivery at reasonable, low prices.

The old and responsible refrigeration supply jobbers have formed the National Refrigeration Supply Jobbers Association in a spirit of co-operation to improve existing conditions. They deserve the support of the entire refrigeration industry.



NATIONAL REFRIGERATION

SUPPLY JOBBERS ASS'N

2707 David Stott Bldg., Detroit, Michigan



AERO SELF-ALIGNING SEALS

Seat and Seal Immediately

LIKE A
BICYCLE
SADDLE!



EVERY SEAL GUARANTEED

COVERED BY U.S. PATENT
2,067,540
OTHER PATENTS PENDING

AERO PRODUCTS CORPORATION
36-52-36th St., Long Island City, New York

Marsh Introduces New Serviceman's Test Thermometer

CHICAGO—"Serviceman," a vapor tension, bourdon-tube type of thermometer, designed primarily for testing interior temperatures of refrigerators, has been announced by Jas. P. Marsh Corp., manufacturer of all types of recording instruments.

Behind the removable back of the thermometer case is a drum on which is wound a considerable length of flexible armored tubing leading to a temperature-sensitive bulb. By placing this bulb at the point to be tested in the refrigerator and placing the thermometer case outside the box, visible readings may be taken of the interior temperature.

On the face of the square thermometer case is a large dial calibrated in single degrees, and protected by an unbreakable crystal. Temperatures are indicated by a red pointer.

The case is completely encircled by a thick rubber ring which eliminates danger of scratching or marring the surface on which the instrument is placed, and minimizes the possibility of damage to the thermometer itself.

The Serviceman is available in four types with range varying from -20° to 100° F. All types are equipped with the patented Marsh "Recalibrator" which affords a convenient way of resetting the instrument if its accuracy be impaired.

Besides its use in measuring refrigerator temperatures, the instrument is said to be suitable for making surveys of air-conditioning and cooling jobs, for recording exterior or room temperatures, and for checking thermostats.

Control System for Office Installation

(Concluded from Page 16, Column 5) stats for the entire office suite. With such an arrangement, one thermostat would control the steam supply to all the units on the south exposure, and the other would operate the steam valve supplying the units along the east wall.

For control of the cooling cycle we must have thermostats located in about the same manner as those for heating. It will be possible even to use the same instrument, provided it is designed for both heating and cooling.

The refrigeration compressor will be controlled by a wide range back pressure, so as the cooling load drops off, the compressor will be automatically shut down, and then as the solenoid valves installed in the liquid lines to each unit open to provide cooling effect, the compressor will start with the increase in suction pressure.

The compressor must be enclosed in a sound-proof housing, and this will necessitate some provision for cooling the motor of the unit. The refrigerant piping will be concealed in the baseboard where possible. The steam connections can be made from the old radiator risers, and thus will not be a large installation item.

Saunders Lays Summer Service Calls to Inexperience

BROOKLYN, N. Y.—Keith Saunders, household sales manager of the Frigidaire Corporation, declared that 50% of the service calls received by refrigerator dealers during June, July and August are "due to the housewife's lack of experience or not knowing how to use her refrigerator in the summertime," in speaking before a group of women at the Brooklyn Eagle's Home Guild last week.

Mr. Saunders discussed care of mechanical refrigerators; he cautioned against use of hammers, screwdrivers or other sharp instruments to get ice trays out when they are frozen.

General Controls Markets Midget Magnetic Valve

CLEVELAND—A new "midget" magnetic refrigerant valve for fractional tonnage installations has just been introduced by General Controls Co. of this city. Port sizes are 1/4 inch and 3/8 inch.

The valve is of the current-failure type, has packless construction, and closes with the line pressure on top of the seat, thus adding to seating pressure and assuring a tight shut-off.

Materials used are corrosion-proof to refrigerants. The solenoid is waterproofed, fully powered to give positive opening, and is said to be quiet in operation. Maximum operating pressure is 200 lbs., and current consumption 8 watts.

Emerson Names 41 Firms To Service Motors

ST. LOUIS—Under a new field service station policy adopted by Emerson Electric Mfg. Co., 41 firms have been appointed authorized service stations to handle all repairs on Emerson motors.

Booklet on Activated Alumina Published by Alcoa

PITTSBURGH—A 40-page booklet on "Activated Alumina, Its Properties and Uses," has just been issued by the Aluminum Company of America. Opening with an introduction in which the properties of activated alumina are outlined, the booklet details its physical characteristics, absorptive efficiency, and its applications in refrigeration, air conditioning, and other fields.

Worcester Firm Markets New Pipe Union

WORCESTER, Mass.—The Rockwood Sprinkler Co. has just placed on the market its new "Dualsteel" union for use in the refrigeration and other industries. The union is said to have high resistance to ammonia and other corrosive elements, and to be able to withstand contraction and expansion in pipe lines.



Known
wherever refrigerants
are controlled

Los Angeles Service Labor Rates Raised

LOS ANGELES—Several refrigeration service contractors in this vicinity are raising the rate on service labor to \$1.75 an hour, effective June 1.

Among the service concerns raising the service labor charge are Household Service, Colcraft Corp., W. W. Allison, Refrigeration Sales and Service, Refrigerator Guaranty Service Co., Wilshire Refrigeration, Peerless Refrigeration Service, Nu Cold Refrigeration, George Belsey Co., Leo J. Meyberg Co., Associated Electric Refrigeration, Edw. L. Glaser.

Chicago Molded Products Issues New Booklet

CHICAGO—Chicago Molded Products Corp., maker of all sorts of molded buttons, switches, knobs, bushings, handles, insulators, and what-nots, has announced publication of "The Story of Plastic Molding," a brochure telling some of the how's and why's of this industry, and listing some of the standard parts which the company carries in stock.

Kentucky Utility to Do Service Work

PADUCAH, Ky.—C. L. Shields and J. W. Williams have been appointed by Kentucky Utilities Co. to give free service on gas and electrical appliances. Bulk of their work will consist of minor repairs and adjustments to appliances damaged by recent flood waters, according to R. V. Green, district manager.

Kiefaber Co. Celebrates Building Opening

DAYTON—Manufacturers from all over the country participated in the grand opening and industrial exposition with which W. H. Kiefaber Co., local distributor, celebrated completion of its new store and warehouse.

Among the 80 major displays was one by Ranco, Inc., Columbus, Ohio, showing its complete lines of both domestic and commercial refrigeration controls.

American Brass Issues 1937 Tubing Booklet

WATERBURY, Conn.—American Brass Co.'s 1937 booklet on seamless flexible metal tubing has recently been published. Profusely illustrated with photographs and drawings, the pamphlet presents a brief history of the company and a delineation of its product.

Described in considerable detail are the essentials of construction, advantages and applications of the various kinds of tubing, typical methods of installation, types of tubing and fittings manufactured by the company, and specifications.

Cutler-Hammer Opens Youngstown Office

YOUNGSTOWN, Ohio—Cutler-Hammer, Inc. recently opened a new office here as a branch of the company's Pittsburgh establishment. E. J. Gove, located here for a number of years, has been placed in charge of the local organization.

Marsden & Wasserman Handle Refrigerants

HARTFORD, Conn.—Marsden & Wasserman, Inc. has been appointed distributor for Virginia Smelting Co. sulphur dioxide and methyl chloride in the Hartford territory.

Organized in 1920, Marsden & Wasserman originally specialized in heating and ventilating, later adding oil burner supplies.

It is now opening a refrigeration and air-conditioning supply department under the direction of Joseph Simons, formerly purchasing agent and sales manager in the refrigeration accessories division of Merchant & Evans Co., and more recently associated with White & Shauger, Inc., Paterson, N.J.

Goldberg to Devote Time To Jobbing Business

CHICAGO—H. M. Goldberg, owner of Herman Goldberg Co., refrigeration supply jobber representing Ansul Chemical Co., American Injector Co., Red Seal Controller Co., and Standard Refrigeration Co., has severed his connection with Standard Refrigeration Parts Co. in order to devote full time to his own organization.

Catalog Supplement Issued By Burnstein-Applebee

KANSAS CITY—Burnstein-Applebee Co., jobber of refrigeration, radio, and general electric equipment, has issued "wholesale buyer's guide No. 53" as a supplement to its catalogue No. 52.



Servel 20-Ton
Evaporative Condenser

HEART and LUNGS

The refrigeration compressor has long been appreciated as the "heart" of the modern air conditioning system, and Servel's broad line of machines, covering the field from one-half ton to twenty tons, has amply proved its worth.

A good compressor, however, cannot function efficiently with an inadequate condenser, and for this reason Servel builds also a full line of high-

grade evaporative condensers from five tons to twenty tons capacity—"lungs" that match the "heart."

These are not merely random assemblies of blowers, coils and sprays, but carefully designed, balanced assemblies with extra large coils, higher air volume, and ample water spray, not only to humidify but also to thoroughly wash the coils free of dust or slime.

Every model is complete—blowers, pumps, coil, receiver, eliminators, motors, belts, valves, test cocks, and guards—ready to use without fuss, addition or alteration.

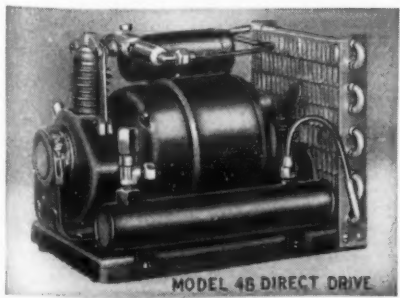
Write for details on Servel, "the complete line." Servel, Inc., Electric Refrigeration and Air Conditioning Division, Evansville, Indiana.

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COMMERCIAL REFRIGERATION
AND AIR CONDITIONING

KELLOGG 1/6 H.P. DIRECT DRIVE DOMESTIC CONDENSING UNIT

Backed By—
—a good reputation!



MODEL 45 DIRECT DRIVE

The Kellogg Direct Drive Household Condensing Unit represents the accumulation of thirty years of experience in the manufacture of compressors. In addition to being vibrationless, compact in size and quiet in operation, it is particularly known for its efficiency and low operating cost.

Prompt deliveries. Replacement purposes—either SO₂ or CH₂Cl.

write for a complete catalog

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HOW OKLAHOMA UTILITY PROMOTED AIR CONDITIONING

Lack of Trained Men Biggest Obstacle to Be Overcome, Gray Tells E.E.I. Members

By T. T. Quinn

CHICAGO—Air conditioning, representing a possible \$100,000,000 additional revenue by 1945, offers great opportunities to utility companies—and utilities can best solve their own problems in the field by helping the air-conditioning manufacturer solve his present big puzzle, man-power, Earl W. Gray, in charge of air-conditioning work for Oklahoma Gas & Electric Co., told Edison Electric Institute members during their fifth annual meeting here last week.

"It is impossible to vision a limit to the potential air-conditioning load," Mr. Gray told the utility men. "The American people are adopting air conditioning as an essential part of their lives, just as they adopted the automobile."

"Every home above \$7,500 will be air conditioned," he predicted. "Today a theater cannot operate without air conditioning. Soon the retail store, the office building, the restaurant, the hotel, the hospital, and every other type of establishment will find air conditioning a necessary part of its equipment."

"Industry in all lines, from the manufacturer of drugs to the producer of iron castings, is using air conditioning, and new uses are found for it every day."

"The future is limited only by the extent of our own efforts. The desire for air conditioning is here. It is our job to remove the mystery and crystallize desire into action and additional revenue."

In explaining how his own com-

pany feels about air conditioning and its potentialities, Mr. Gray mentioned that, since aggressive promotion began in 1933, Oklahoma Gas & Electric Co. has brought its air-conditioning total to 490 installations, aggregating a load of 6,600 hp.

Being a relatively new industry, air conditioning has brought problems, Mr. Gray admitted, but many of the problems have solved themselves, he added, and the others can be mastered "if we keep our feet on the ground."

Oklahoma Territory Differs from Big City

Problems of air-conditioning promotion in a metropolitan center, where customers and well-manned dealers are plentiful, are also quite different than those in the Oklahoma Gas & Electric territory, where volume must be secured through relatively many small jobs in a score or more of scattered cities, he reminded.

Summarizing his territory, Mr. Gray said it extends from western Arkansas 380 miles across Oklahoma to the Texas border on the south, and 210 miles from the northern to the southern tip of Oklahoma. Two hundred and thirty-eight communities are served, the total population being 638,000, of which 225,000 is in Oklahoma City itself.

Four of the cities are from 25,000 to 35,000; eight from 10,000 to 15,000;

12 from 3,000 to 8,000; and the rest are villages.

Oklahoma Gas & Electric's activities in air conditioning are promotional only, since the company does no merchandising. Because potential business would not justify having a specialist in each of the company's seven division offices, division commercial managers were trained in air conditioning, and have handled that promotion in their territories.

Customer Engineering Service Developed

"In the beginning," Mr. Gray said, "we had difficulty because there were no experienced firms to sell the equipment. Consequently, when we did get a customer sufficiently interested to ask for bids, he received such a variety of opinions as to the necessary capacity and the method of installation that he concluded none of the bidders knew what they were doing, threw up his hands and decided to wait until the art was better developed."

"When we asked for bids on equipment for the first air-conditioning installation in our own building, it was forcibly demonstrated to us that many of those selling equipment were somewhat at sea. It was evident from this experience that we would have to take the lead in both promotion and engineering, by acting as consultants for our customers and dealers."

"Fortunately, we had as the head of our mechanical and structural design engineering department a man who had not only had years of experience in ice plant design and erection but also had made a study of air conditioning. He was assigned the task of developing his department to handle the detail engineering and writing of specifications for those jobs that the commercial department considered worthy of such service."

"This plan has been followed through and has given excellent results. The revival of business has made it necessary to increase the personnel of the engineering department, and new men have been chosen with close attention to previous training and experience that fitted them for air-conditioning work."

"Under this arrangement with the fluctuation of the air-conditioning season, as many men as are needed are available for assignment to air-conditioning engineering, and only the actual time used is charged against this promotion. The rest of the time these men are busy on the general run of work handled by the department."

"The division commercial manager develops his prospect and gives him an approximation of the capacity required, installation cost, and operating cost. If the customer requests specifications, a survey is made and specifications are furnished which give the capacities necessary, a general description of the equipment and a suggested method of installation."

"In the preparation of specifications, standards are used which are a compilation of the best data available from the various manufacturers, the A.S.H.V.E. and our own experience. The specifications are written so the equipment of any reputable manufacturer may be used."

"A check is made by the distribution engineering department to determine the service facilities available at the given location, and this, together with a determination of the rate application, enables us to designate in the specifications whether single or three-phase motors shall be used, permissible starting currents, and the metering arrangement."

"Many of the pages of the specifications are identical for certain classes of jobs so that, with the routine that is set up, the complete blue printed specifications are turned out in a very short time."

"Usually eight copies of the specifications are delivered to the customer by the division commercial manager, together with an estimate of the cost of operation when added to his present usage. He is also furnished a list of the air-conditioning firms in his territory and urged to ask for bids."

"There is something psychological about a blue print that gives the customer confidence and influences him to go ahead with the purchase of equipment. We have frequently found that a hesitant prospect could thus be influenced to ask for bids."

"We are in no sense in competition with consulting engineers. In fact, on many jobs we recommend that an engineer be retained. This phase of our work is limited to the smaller jobs where the customer will not retain an engineer, but is reluctant to go ahead with the purchase of equipment about which he knows nothing."

"It has always been our purpose to reduce the amount of engineering service furnished just as rapidly as the distributors of equipment built up competent organizations. We now have a number of excellent companies in our territory and, to aid in building them up, we find it necessary to curtail the amount of engineering assistance furnished dealers."

"Obviously, if a distributor plays the game and employs engineers, he operates under a much greater overhead than the firm which does not have an engineer and depends on the utility to do all of the engineering. Therefore, we have discontinued making surveys or doing other detail engineering for dealers, and do this type of work only on the direct request of the customer."

"Of course we do advise with the dealers and help them as much as possible as long as we can do so without showing any favoritism. We urge them to call us regarding jobs that they may be working on, so that we may check the rate application and give an accurate estimate of operating costs. We find that this greatly helps the sale, as the average customer has an exaggerated idea of the operating cost."

Prospect Tips Regularly Mailed to Distributors

"Periodically we mail to all the air-conditioning distributors a list of those whom we consider good prospects and urge them to contact the customers and secure permission to bid. In return for the prospect lists that we furnish the distributors, we ask that they report to us each month the air-conditioning sales they have made in our territory. These reports assist us in keeping an up-to-date record of all installations on our system."

"A combined report is furnished each month to our executives, and at the close of the year we make up an annual report, of which a copy is given to each of the distributors. This statistical work requires considerable time, but we consider it essential because it enables us to follow closely the trends of the business, and the manufacturers as well as the distributors are very glad to get this information."

"In our promotion most of the advertising media have been used. Direct mail pieces to carefully selected lists of customers prepared by our division commercial managers have produced excellent results."

Newspaper Advertising Extensively Used

"Newspaper advertising is used in all of the papers on our system. In the smaller cities, a congratulatory newspaper advertisement on the occasion of the starting up of a new

commercial installation is very effective and much appreciated by the owner."

"In all of our advertising, we endeavor to play up the installations in our territory, showing our prospects how their neighbors and friends are profiting with air conditioning. Outdoor posters, radio programs, and educational talks before civic clubs, builders, architects, and employees have been helpful."

Manufacturers Find Good Outlets Rare

"The utilities are not the only ones who have had problems. The manufacturers have had their share, and one of the most trying has been the difficulty of finding satisfactory outlets."

"In many instances distributors of household refrigerators undertook the distribution of air-conditioning equipment with their regular dealers as sales outlets. They soon learned that this was a new type of business and that, although their entire organization and training had been centered on merchandising, they were now in the contracting business, a highly specialized one at that. They found that instead of specialty salesmen they had to have sales engineers as well as design and installation men who added heavily to their overhead."

"Furthermore, they found that their dealers could not afford to hire men trained in air conditioning so could do little more than advise the distributor of any prospect and leave it up to him to engineer and sell it. This added to the selling expense of the distributor and, by the time he included a profit for the dealer, he could not compete with the distributor or manufacturer who was selling direct."

"The local dealer did not get very enthusiastic about trying to make air-conditioning sales when he found that it took so much time to make one sale and he knew that he could make more money selling refrigerators. It became evident there wasn't much place in the field for the dealer, as far as commercial air conditioning was concerned."

Air Conditioning Separate From Household Selling

"The manufacturers have realized these difficulties and in many cases have divorced air conditioning from household refrigeration. Where possible, they have appointed distributors whose sole interest is air conditioning or who at least are in contracting lines."

"These firms operate as distributor dealers, working the territory and selling direct and, where possible setting up local dealers to handle their self-contained units and turn prospects for larger jobs to the distributor. These distributors are covering the territory fairly well, and the dealer situation is rapidly clarifying, at least in our larger cities, as the volume of air-conditioning sales becomes great enough to keep them interested."

"The utilities should continue to (Concluded on Page 19, Column 1)

Artic

REG. U. S. PAT. OFF.

(DU PONT METHYL CHLORIDE)

COAST-TO-COAST DISTRIBUTION—The standard Methyl Chloride. Stocked in standard and special 20-lb. containers for prompt delivery at 65 stock points in 46 cities; also Cuba, Mexico and Hawaiian Islands.



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E. I. DU PONT DE NEMOURS & CO., INC.
WILMINGTON • DELAWARE



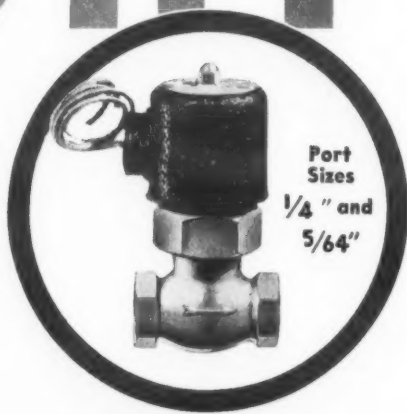
AT YOUR FINGER TIPS

Write for free copies of "ARTIC Service News" containing list of authorized distributors and stocking points, and current information about refrigeration.

TIGHT

NEW CONTROL OFFERS PERFECT SHUT-OFF OF LOW & FRACTIONAL TONNAGE INSTALLATIONS

The New GENERAL K-20A magnetic refrigerant valve provides positive control of low and fractional tonnage installations. The 5/64" port will hold tight on liquid line capacities as low as 150 BTU per hour.



Port Sizes
1/4" and
5/64"

QUIET, DEPENDABLE OPERATION

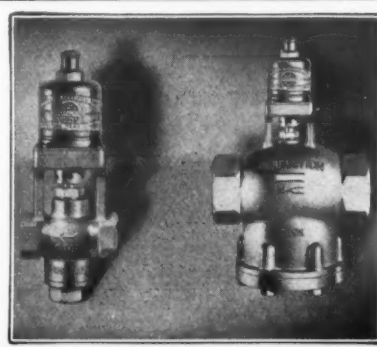
Current-failure solenoid entirely quiet. Simple, packless valve construction eliminates all trouble. All materials corrosion-proof to refrigerants . . . coils water-proof . . . every valve rigidly tested. Write for catalog J-185.

\$840
LIST PRICE

GENERAL CONTROLS

1505 Broadway, Cleveland, Ohio
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421 Dwight Building, Kansas City, Mo.



WEATHERHEAD TESTING VALVES

A necessity for charging gas or oil in low and high sides—testing for leaks—purging gas from high side or gauge line—setting valves and controls. Weatherhead Testing Valves make all of these operations simple and accurate.

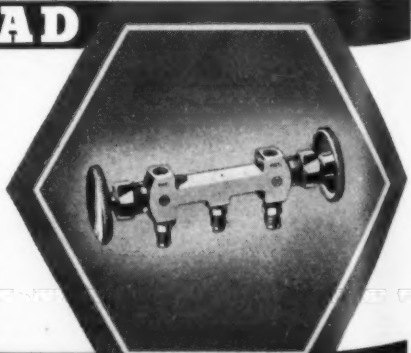
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PERFECTION Condensing Water Regulators are Certified to Excel

Ask for catalog covering complete line of Condensing Water Regulators, Compressor Parts, Valves and Fittings

PERFECTION REFRIGERATION PARTS CO. HARVEY, ILLINOIS



Gray Sees Huge Market for Room Coolers If Utilities Do Good Promotion Job

(Concluded from Page 18, Column 5) assist the manufacturers in securing good representation, as our promotional efforts will get results only according to the activity of the sales organizations.

"Man power is the greatest need of the distributors at present. They are unable to secure sufficient men with the proper background for sales engineering, and skilled mechanics, particularly sheet metal men, are at a premium.

Restaurants & Stores Best Developed Markets

"Air conditioning has been accepted most rapidly by our restaurants and retail stores. It quickly shows a profit, and after one season's operation, the owner says he would not do business without it.

"In the larger centers competition between merchants is now selling air conditioning. This is shown in Oklahoma City where in three blocks on Main St. 29 stores now have air conditioning, and several others have delayed only because of lease difficulties. Office buildings and other installations come on more slowly because of the larger investments necessary.

Residence Conditioning Finds Wide Acceptance

"The promotion of residential air conditioning had an uphill climb at the start. In our territory with an abundance of 1,000 B.t.u. natural gas selling at around 45 cents per 1,000 cu. ft., we have the ideal fuel for winter air conditioning, but a larger percentage of our homes use open gas fires or floor furnaces and have no basements, and in many cases no flues.

"Under these conditions, the idea of year-around air conditioning was difficult to sell. As a result, most of the first installations consisted of a conditioner cabinet in each room, supplied with refrigerant from a remote compressor.

"A few larger homes which had basements were summer conditioned by using one conditioner in the basement, serving the first floor through floor grilles, and another conditioner in the attic with ducts above the ceiling, serving the second floor rooms through side wall grilles installed in partitions or above closet doors. A compressor in the basement furnished refrigerant for alternate operation of either conditioner.

"The revival of residential construction last year brought several surprises. We found that the educational work on air conditioning was bearing fruit. The home builders wanted comfort in their new homes. Practically all of the better class homes now being built are fully insulated, which makes them better prospects for air conditioning.

"The craze for recreation rooms has popularized basements and made winter air-conditioning plants easier to sell. The builder then finds that it will not cost him as much as he had expected to add the evaporator and condensing unit. As a result, even the speculative builders are featuring year-around air-conditioned homes.

"If the builder is unwilling to make the investment for a complete plant, we urge the installation of the proper winter conditioner with ducts, grilles, and zoning designed for cooling in order that the summer equipment may be added later.

"We feel sure that every home incorporating a winter air conditioner of this type will connect a compressor to our lines within the next few years. The average insulated

home, with the first and second floors zoned for alternate operation, can be cooled with a 3-hp. compressor. Occasionally 5 hp. is required, and our residential rate permits the use of individual single phase motors up to and including 5 hp.

Utilities Can Bring Down Room Cooler Prices

"The room cooler offers the medium for volume sales of air conditioning. It is something that can be handled by the dealer in the small town and sold with a minimum of sales expense. The manufacturers have prepared survey forms with which in a few minutes the salesman can determine whether his room cooler is applicable or whether larger equipment is required.

"The dealer is doomed to failure who, instead of giving his salesmen some training in the fundamentals of air conditioning, starts them out with the idea that his cooler is good for so many square feet of floor space and that fresh air is a non-essential.

"Too often we have seen them applied in this hit-or-miss fashion, with the consequence that the customer was so displeased with the results that he condemned air conditioning in general.

"The manufacturers have made rapid strides in the development of room coolers and now have excellent equipment in both air-cooled and water-cooled models. When we consider the amount of refrigeration they have packed into an attractive cabinet, the prices are reasonable.

"Of course we all want to see the prices reduced so our market will be increased. We are the ones who can bring a reduction. No rapid decrease can be expected in commercial air-conditioning costs because of the large percentage of the total made up of local items of labor and material.

"The room cooler price, however, is largely equipment cost. If the utilities will get behind room coolers as they did with electric refrigeration, quantity production will reduce prices.

"Room cooler installations present problems that must be given attention. The tendency has been to sell them as socket appliances, but we know that motors of the size necessary in the larger models will not generally operate satisfactorily on 115 volts because few of our older buildings have circuits larger than No. 14 wire. Some dealers think that the utility is unusually severe in requiring that motors above 1/2 hp. be operated at 230 volts.

"After a few experiences with motor trouble and after we have convinced them that we are furnishing full voltage at the entrance, they decide that there may be a reason for such a requirement.

"Unfortunately, some of the manufacturers are shipping out machines built only for 115 volts, with no provision for reconnection.

"The horsepower rating is not an index of the power input as we find

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U.E.I. and Refrigeration-Air Conditioning Industry For 10 years U.E.I. has supplied this industry with trained, competent shop mechanics, service and installation men. Our graduates are trained as you want them trained.

Free Placement Bureau U.E.I. trained men are available everywhere. Use our Free Placement Bureau when you need help.

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Chicago, Illinois 1927 New York, N.Y.



"Refrigeration? You couldn't sell us anything BUT Copeland. My own experience has shown me which is the best."

Hotels, restaurants, soda fountains, dairies—wherever economical, trouble-free refrigeration is vital, you'll find Copeland enthusiasts.

Write for our Sales Plan

COPELAND

REFRIGERATION CORPORATION . . . DETROIT, MICHIGAN

room coolers with 3/4-hp. motors having an input of 1,250 watts. Other air-cooled room coolers have a total input for compressor and fans as high as 1500 watts.

Air Washers May Harm Real Air Conditioning

"Evaporative cooling is another load that has gained impetus under the public demand for cooling. The ordinary evaporative cooling system consisting of a washer, circulating pump, and a squirrel cage fan, does not control the humidity. It will give effective cooling without uncomfortably high humidities only in those localities where the wet-bulb temperature is moderate.

"This condition obtains on a part of our system, and the air washer fills a real need in applications where some measure of cooling without humidity control is desired. In some cases, such as a small theater without prospect of sufficient revenue to justify the owning and operating cost of air conditioning, an air washer is the only answer.

"One of the national chain store systems has recently installed this type of equipment in a number of their stores in the middle west, and it will be interesting to study the results obtained this summer.

"The air washer has its place in the field, but unfortunately some salesmen for this type of equipment endeavor to sell it as air conditioning and naturally get a hearing because their price is usually 50% of that of an air conditioner.

"We feel that our customers should be told the facts as to what they are getting and what they can expect

of it, and then they may spend their money as they wish. We do dislike to hear people condemning air conditioning and then find that they are really talking about an establishment which has an air washer.

Problem of Rates for Air Conditioning

"Various problems have arisen, not only in promoting but also in serving the air-conditioning load. Rates, as for any load, must be competitive. Some companies have not found it necessary to promulgate special rates, but have waived the application of demand ratchet provisions to summer demands.

"Summer air conditioning for some applications has a low annual load factor, but the increasing acceptance of year-around conditioning brings an improvement. We should not forget that a commercial customer becomes a bigger user of our service for lighting and other applications when we increase his business and his profits with air conditioning.

"Heavy air-conditioning load in congested areas served from an underground system requires a large investment in facilities to serve low load factor business. The utilities and the manufacturers must work together to improve the characteristics of this load.

"Further developments in the use of the reversed cycle of refrigeration for winter air conditioning, and various types of storage systems offer much promise. There is now being installed on our system a combined direct expansion and storage system which will handle a 130-ton load with a 75-hp. compressor."

Air Conditioned G-E Model Home Opened

MANHASSET, Long Island, N. Y.—Equipped with a General Electric air-conditioning system, automatic gas furnace, and electric kitchen, the 1937 "Metropolitan Home" was recently opened here by William J. Levitt & Sons, builders.

For its public bow, the home was completely wrapped in cellophane.

The air conditioner is designed to provide complete winter air conditioning, including humidifying, cleaning, and circulating of the air.

Lee Heads Air Control Sales for N. Y. Firm

NEW YORK CITY—Jack R. Lee has been promoted to the position of sales manager of the air-conditioning and heating sales division of Wholesale Radio Equipment Co., according to Sam Salzman, president.

Mr. Lee will have charge of sales and promotion of Air Device Co. air-conditioning equipment, and Crawford electric ranges.

Servel System Installed By New Utah Outlet

PRICE, Utah—Mutual Lumber Co. has been appointed distributor of Servel electric refrigeration and air-conditioning equipment in this territory.

H. H. Hadsell, sales engineer of the company, is in charge of promotion of Servel products. He recently sold two air-conditioning systems to a coffee shop and a business office.

WAGNER has furnished motors for air conditioning equipment for many years and has continuously improved motors for this purpose. Among the outstanding features of Wagner motors are: (1) QUIET OPERATION, (2) special operating characteristics to meet this exacting service, (3) long life, and (4) attractive appearance. As a result of Wagner's many years of experience in building motors for air conditioning equipment, Wagner motors are leaders in this field.

THEY MEET
YOUR REQUIREMENTS
OF PERFORMANCE
AND DEPENDABILITY



Regardless of your type of air-conditioning system, there is a Wagner motor ideally suited for operating it. Wagner motors are built to meet the starting and operating requirements of compressors, pumps, and air-movement devices. The Wagner line includes all types of motors generally applied on air-conditioning machinery, making it possible for you to completely equip your apparatus with Wagner motors. Whether alternating or direct current; single or poly-phase; open, drip-proof, or totally-enclosed; rigid or resilient-mounted—there's a Wagner motor now in existence, ready to be applied on the job.

WHEN YOU INSTALL Wagner AIR-CONDITIONER MOTORS

A FEW OF THE POINTS OF SUPERIORITY OF WAGNER SQUIRREL-CAGE MOTORS ARE:

FRAME is fabricated from heavy steel-plate rolled into cylindrical shape and welded.

AIR-OUTLETS are extra large for unrestricted ventilation.

OIL-WELL HOUSINGS are sealed against the entrance of dirt and grit, and the escape of oil.

SHAFT is designed to carry mechanical overloads.

BEARING is steel-backed, babbitt-lined. Wagner also furnishes ball or roller bearings.

CONDUIT-BOX is mountable in four positions.

END-PLATES are liberally designed, heavy and massive, amply strong and rigid, to withstand severe service conditions.

FEET are of steel, welded to the stator-frame—accurately spaced according to Wagner dimensional diagram sheets.

Many other features of Wagner motors are worth investigating. Write today for Bulletin 182 which describes the Wagner motors that are Second-to-None for air conditioning.

Wagner Electric Corporation

6400 Plymouth Avenue, Saint Louis, U.S.A.

MOTORS • TRANSFORMERS • FANS • BRAKES

THE BUYER'S GUIDE

ASK "MATT" FUGLE—

He'll tell you Peerless "Humidi-Pack" Household Replacement Evaporators will do every thing a good evaporator should—and what is more—they'll do it better.

"The Fins at the back", says Matt, pointing, "generate abundant air circulation, the key to good refrigeration."

Add correct humidity control, fast freezing of ice cubes, beautiful finish and design, plus other advantages too numerous to mention and you have "Humidi-Pack."

We'll "string along" with Matt on all this because he oversees the manufacture of these "Humidi-Packs" and knows whereof he speaks.

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Established in 1912 as the Peerless Ice Machine Co.
Main Factory—General Offices
New York Factory 515 West 35th St. Pacific Coast Factory
43-20 34th St. Chicago 3000 S. Main St.
Long Island City Los Angeles



BUY PEERLESS FOR PERFORMANCE

Servel System Conditions New Springfield Store

SPRINGFIELD, Ill.—A Servel air-conditioning system, including a model WAD-100 machine unit and a model ACFD-101 floor-type conditioner, was installed recently in the new store of Neumode Hosiery Co. here. The equipment was supplied by Capital City Paper Co., distributor.

Reno's New Club Fortune Conditioned by Airtemp

RENO, Nevada—Nevada Air Conditioning Co. has installed an Airtemp air-conditioning system in the new Club Fortune. Sierra Sheet Metal Works did the duct work.

Wichita Firm to Manufacture Air-Conditioned Trailers

WICHITA, Kans.—The Park Manor Trailer Co., Inc. has established its main factory here for the manufacture of air-conditioned coach trailers.

be accurately predicted for conditions at which tests have not been made.

By properly correlating data in this way a few test points may be made to show performance at all conditions through the useable range of the equipment. In this way, the number of test runs which must be made may be greatly reduced.

Condensing Unit Data

Since the condensing unit consists principally of a compressor, a motor, and a condenser, it is necessary to obtain complete performance data and characteristics separately for each of the elements which go to make up the condensing unit.

Motor Data Should Include:

- (1) Starting and full load current.
- (2) Current consumption (normal).
- (3) Current consumption (maximum allowable).
- (4) Horsepower (normal).
- (5) Horsepower (maximum allowable).
- (6) Efficiency.
- (7) Starting torque.
- (8) Field and armature temperatures at various ratings.
- (9) Noise level.

Condenser Data Should Include:

- (1) Capacity at various condensing temperatures, water rates, and inlet condensing water temperatures covering the useful range.
- (2) Water pressure drops at various flow-rates.
- (3) Refrigerant pressure drops at various ratings.
- (4) Liquid temperature delivery at various loads and condensing water conditions.
- (5) Noise level.

Compressor Data Should Include:

- (1) Volumetric capacity.
- (2) Volumetric efficiency at various conditions.
- (3) Refrigeration capacity at various discharge and suction pressures and speeds.
- (4) Power consumption at various conditions.
- (5) Efficiency at various conditions.
- (6) Wearing and noise of valves.
- (7) Pressure drop and gas velocity through valves.
- (8) Pressure drop through unit.
- (9) Oil "slugging" characteristics.
- (10) Seal efficiency, wear and power consumption.

By the use of the above data it is possible to select the motor, compressor, and condenser which are suitable for combining together into an economical condensing unit of high performance.

The various elements must be so selected that they are in proper balance, so that no part is overloaded to the point of penalizing performance, nor underloaded to the point of penalizing first cost, and so that head pressures are not so high that the compressor is penalized, nor so low that the condensing water rate or refrigerant distribution throughout the system is penalized.

Performance data must then be obtained. (Continued on Page 21, Column 1)

Air Conditioning Made Easy

By F. O. Jordan

Purposes in Obtaining Test Data; Procedure for Various Units

SECTION 16

Test Data

General

The purpose in obtaining test data is twofold: first, to collect and correlate information which will enable the designing engineer to create a perfect piece of equipment for the field engineer to install; second, to obtain the performance characteristics necessary for the field engineer's use in applying to the field the equipment which the designing engineer has developed for him.

The following requirements must be observed when running tests:

- (1) Data must be accurate.
- (2) Data must be complete.
- (3) Obtaining of impertinent data must be avoided.
- (4) Data must be concise.
- (5) Data must be obtained in such manner that the exact influences of various factors are shown.
- (6) Data must be correlated so that it may readily be used.

The necessity for item No. 1 is obvious, as inaccurate data invariably must lead to faulty design and trouble. Conditions must be held constant at the desired test conditions during the test, and for a sufficient length of time before the test, or the true performance of the equipment cannot be determined. All influence whose exact magnitude is unknown must be eliminated. Corrections must be applied for all conditions not standard.

Although the necessity for complete data (item No. 2) is obvious, failure to obtain it is common. Frequently the failure to obtain information concerning one point may render useless the work of months. The failure to determine the influence of one pertinent factor may make it impossible to apply the laboratory data when actual field conditions are encountered.

For example, direct-expansion air-conditioning coil performance data which did not in some way include the effect of refrigerant pressure drop would render impossible the accurate selection of the condensing unit because the suction pressure at the compressor would be unknown.

Important as is the obtaining of complete data, the great waste of time and the beclouding of the issue which can result from obtaining great masses of unnecessary data (item No. 3) may be equally important. Often it is possible within an hour to prove some undesirable

characteristic which may show a piece of equipment or some method of procedure to be undesirable.

As mentioned under item 4, data must be concise and definite, so that trends may readily be observed, and so that the actual meaning of results is obvious; such data can be obtained only through a systematic, well-ordered program of tests, intelligently arranged in view, and with a complete understanding of, the problems to be solved, and of the demands upon the type of equipment under test.

As stated in item 5, data must be obtained in such a way that the influences of various factors are shown. A cardinal point in testing is to change only one factor at a time, for otherwise it is impossible to determine the influence of each factor. Obviously if two factors are changed at one time, it is impossible to determine the portion of the resultant change in performance to assign to either factor.

Finally, as mentioned under item 6, data must be correlated logically and systematically so that it may be easily understood, and made available for use, and so that performance may

Learn the Fundamentals Now!

Read 'Air Conditioning Made Easy'

Published on this and the following two pages is the beginning of Section 16 of AIR CONDITIONING MADE EASY, a manual by F. O. Jordan, air-conditioning editor of the News and former head of the air-conditioning development laboratory of the Airtemp division of Chrysler Corp. The book is being published in serial form in the weekly issues of AIR CONDITIONING AND REFRIGERATION NEWS.

AIR CONDITIONING MADE EASY is a manual and textbook on air-conditioning engineering practice. The section begun in this issue—"Test Data"—gives an indication of the wide scope of the book. It is a manual which deals not only with the engineering principles of air-conditioning and field application procedure, but also with the actual design of equipment and even the proper organization of personnel for a company getting into the field.

As such, AIR CONDITIONING MADE EASY should be widely useful to individuals already in the air-conditioning field who want to broaden their knowledge of it, to students who are intending to make air conditioning their career, and to executives of manufacturing or distributing organizations who are contemplating getting into the air-conditioning business.

The following instalments of AIR CONDITIONING MADE EASY have already been published in the News:

What Is Air Conditioning?—Sept. 23.

Section 1, Introduction, and Section 2, Definitions and Simple Thermodynamics—Sept. 30.

Section 3, Coil and Water Cooler Performance—Oct. 7 and 14.

Section 4, Condensing Unit Performance—Oct. 21.

Section 5, Air Movement and Ventilation Requirements—Oct. 28.

Section 6, The Complete Air-Conditioning System for the Cooling Season—Nov. 4, 11, 18, and 25.

Section 7, Heating—Dec. 2, 9, 16, 23, 30, Jan. 6, 13, 20, 27, Feb. 3, 10, 17, 24, March 3, and 10.

Section 10, Don'ts—March 17 and 24.

Section 14, Controls and Zoning—March 31, April 7, 14, and 21.

Section 15, Design of Equipment—April 28, May 5, 12, and 19.

Section 13, Noise Control—May 26 and June 2.

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THESE new Imperial strainers positively remove every trace of scale, compressor chips or dirt in the oil. Strainer No. 249-C has 17 3/4 sq. in. of mesh screen plus a closely woven asbestos cloth sack . . . and you can be certain that those fine particles, that do so much damage to valves, won't get by it.

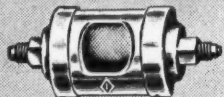
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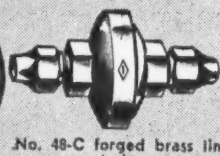


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Test Data in Figuring Capacity Of Condensing Units

(Continued from Page 20, Column 5) tained from the complete condensing unit, at field operating conditions. Head pressures must be selected for maximum overall operating cost, remembering that high head pressures result in increased current costs, while low head pressures raise water costs, and that the most economical head pressure increases as the inlet condensing water temperature rises. With the properly designed unit, the following head pressures result in economical operation.

Inlet Temp.	Outlet Temp.	Head Pressure (lbs.)	Discharge Gas Temp.
60	81	101	90
65	85	108	95
70	89	116	100
75	93	123	103
80	97	131	107
85	101	138	111
90	105	146	115
95	109	153	119
100	113	160	122

The foregoing is based upon the use of water directly from the city mains for condensing water. For installations where a cooling tower is used, the picture is considerably different. Higher water rates with resultant lower head pressures at given inlet water temperatures become more economical. Generally, condensing water temperature rises of 5° result in good performance when cooling towers are used. Because of the higher water rate, different condensers, with lower resistance to water flow, should be used with the cooling tower installation.

Considering all angles, it seems that two lines of condensing units should be used, one line for use with condensing water direct from the average city mains, and the other for use with cooling tower installations.

For equipment which uses city water, capacity tables would be based upon head pressures as tabulated above. For equipment which is to be used with the cooling tower, similar capacity tables would be made up, based upon the higher water rates required in order to limit the temperature rise to about 5°.

In order to obtain test data necessary for arranging field data on the above basis, the following readings should be taken at each of the follow-

ing suction pressures: 20 lbs., 30 lbs., and 40 lbs., and at the following inlet water temperatures for each of these suction pressures: 60°, 75°, and 90°.

1. Inlet water temperature.
2. Outlet water temperature.
3. Waterflow rate.
4. Water pressure drop through compressor.
5. Water pressure drop through condenser.
6. Water pressure drop through entire unit.
7. Suction pressure.
8. Refrigerant flow-rate.
9. Liquid refrigerant temperature from condenser.
10. Suction temperature to compressor.
11. Gas refrigerant temperature to condenser.
12. Head pressure. (Must be set according to inlet water temperature as given by above table.)
13. R.p.m.
14. Voltage.
15. Amperes.
16. Current consumption.
17. Power factor.
18. Volumetric efficiency.

19. Useful B.t.u. capacity. This should be obtained by two methods: (1) by use of calorimeter; (2) by measuring the refrigerant flow.

In addition, the following data should be furnished:

1. Pump down capacity.
2. Minimum allowable refrigerant.
3. Overall dimensions.
4. Size and type of all connections, including liquid, suction, inlet water, outlet water and drain.
5. Bore and stroke.
6. Number of cylinders.
7. Shipping and net weight with and without motors.

From the above data, charts and tables may be derived showing horsepower per ton, cubic inches piston displacement per ton, capacities, etc. The chart shown by Fig. 76 is a sample condensing unit capacity chart.

Directions for its use are as follows:

1. Locate intersection of suction pressure curve with final water tem-

Typical Condensing Unit Performance Chart

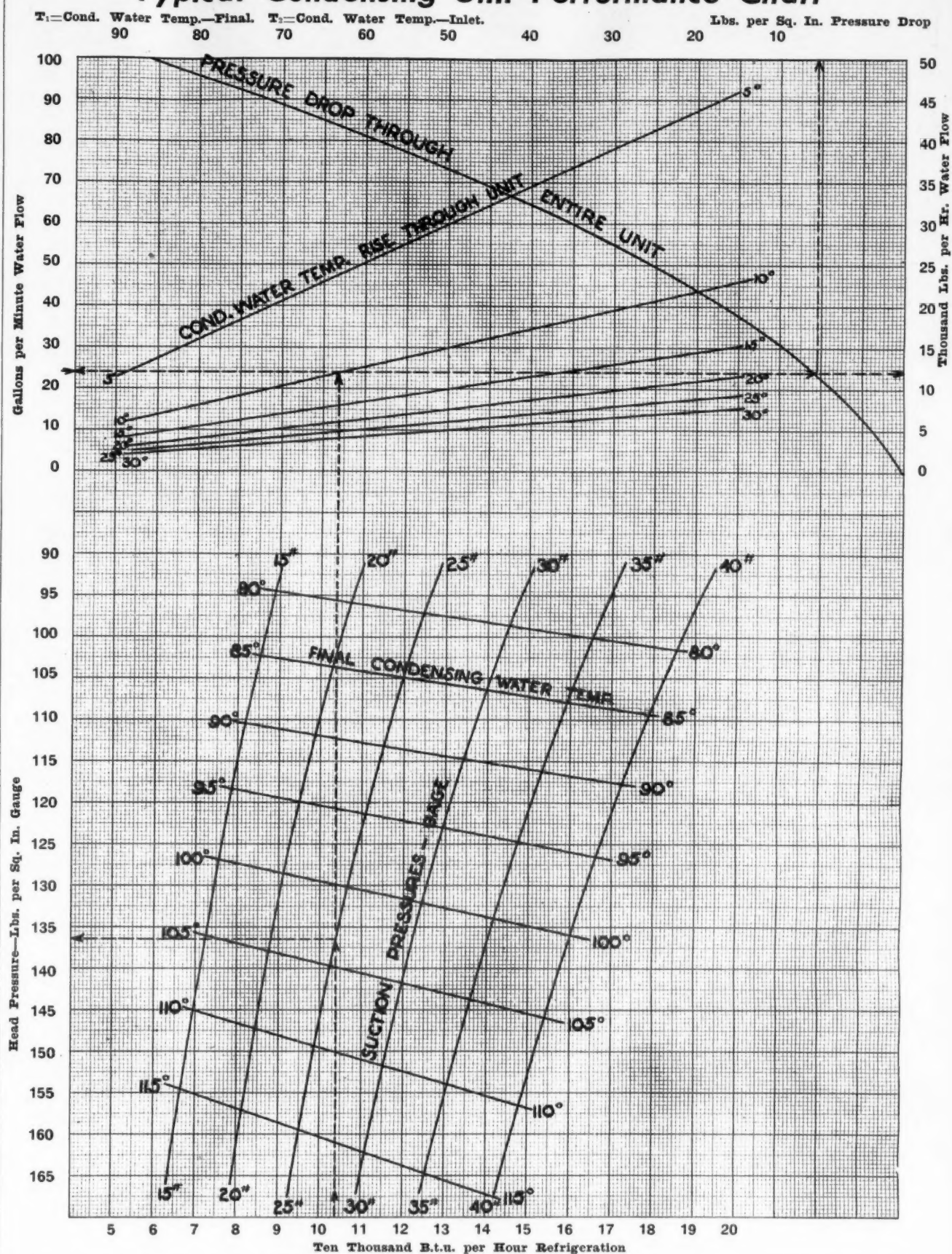


Fig. 76—Sample condensing unit performance chart. Directions for use are given in accompanying text.

perature curve. Read capacity directly below on lower scale. Read head pressure at left vertical scale.

2. Rise vertically to condensing water temperature rise, then move horizontally left to read water flow in g.p.m., or right to read water rate in thousands lbs. per hour.
3. Move horizontally to pressure drop curve and rise vertically to read

pressure drop of condensing water on upper scale.

When running tests it is very essential that a high degree of constancy be maintained at all times for head pressures, suction pressures, condensing water flow, pressure, and temperature, compressor speed, room temperature, etc. To assist in these requirements, the following conditions

should be obtained:

- (1) Voltage must be constant. No other load should be carried upon the same electrical circuit which supplies the condensing unit.
- (2) Condensing water should be taken from a mixing tank of ample size to equalize temperatures and pressures, and the supplies to the tank

(Concluded on Page 22, Column 3)

IS IT SAFE FOR THE SERVICE MAN TO DO



Check These Outstanding Features of C-H Refrigeration Control

- ✓ 4 models meet nearly every need
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- ✓ C-H settings are dependable; stay the way you set them for years
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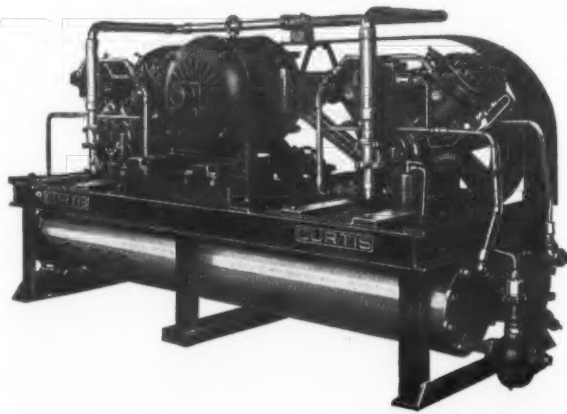
Any service man who has been over the ground knows that more and more of the leading refrigerator manufacturers are standardizing on Cutler-Hammer Refrigerator Control. This fact is doubly important to the man who knows what thorough and exhaustive tests precede such a decision.

And every service man who is trying to establish himself soundly with his customers knows that what is best for the box must be best for him. That is why more and more service men standardize on the same control... Cutler-Hammer Control... for replacement service. It's the only control that gives them the proven features of C-H Design. Write for literature. CUTLER-HAMMER, Inc., Pioneer Manufacturers of Electric Control Apparatus, 1362 St. Paul Ave., Milwaukee, Wis.



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YOU CAN ALWAYS DEPEND ON CURTIS



More and more, with the growing demand for air conditioning, dealers and engineers alike are realizing the built-in quality of Curtis products which guarantees efficient, economical, carefree performance. There is a Curtis Condensing Unit for every air conditioning and refrigeration need.



- Curtis engineering created the patented "Centro-Ring" system of positive pressure oiling with no wearing parts. Curtis designing includes

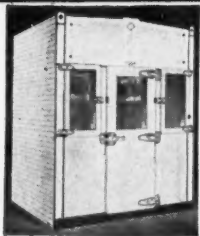
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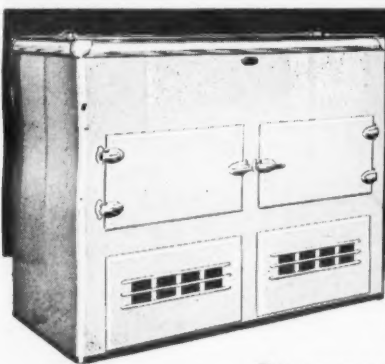
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PELCO is **DOUBLY USEFUL!** Upper compartment is a cooler for bottled beverages—of unequalled efficiency. Lower is a roomy refrigerator for foods or a pre-cooler for beverages. For money-saving, trade-building performance—that exceeds every promise—the swing is to PELCO. Write Dept. A-67.

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Every style and size of forged flared tube fitting for the refrigeration industry is available from standard stock at Commonwealth.

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PAR AIR COOLED HIGHSIDES

PAR refrigerating equipment has been designed by men with years of experience in the commercial refrigeration industry. All models have been thoroughly tested before approving for production.

Multiple cylinders of large capacity insure very low operating speeds. Sizes 1/4 to 1 horse power are V type four cylinder pumps. Sizes 1 1/2 and 2 horsepower are V type four cylinder pumps.

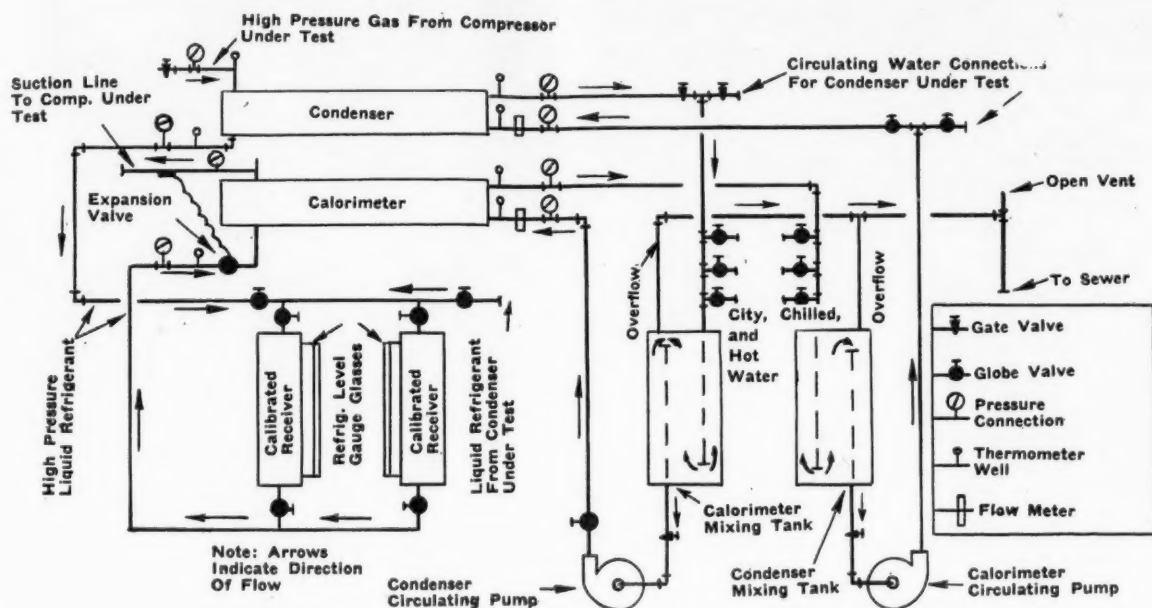
Par highsides are designed for use with Freon or Methyl Chloride refrigerants. All units are charged with Freon unless otherwise specified.

All air cooled highsides are equipped with oversize condensers, extra large receivers, sight oil gauge, shut-off valve between condenser and receiver, completely wired ready for installation.

Attractively finished, red pressed steel base, motor-compressor—control, black enamel, belt and fan guard silver. Base silver striped as shown in illustration.

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Fig. 77—Condensing Unit Test Panel



Data Used in Testing Of Water Coolers

(Concluded from Page 21, Column 5)

should be taken from branch water mains which carry no other load. (3) Pipe connections from mixing tank etc., and between equipment should be kept short so as to minimize the influence of outside conditions.

The capacity of the condensing unit may be measured directly by measuring the temperature and quantity of liquid refrigerant discharged, or by evaporating the liquid refrigerant in a calorimeter.

When the liquid refrigerant is measured directly, a suitable flowmeter may be employed, or the liquid refrigerant may be discharged into a calibrated receiver so that the time may be noted which is required to discharge a given quantity of refrigerant.

Generally two receivers are used, one receiver being allowed to drain while the other is being filled, so that operation may be continuous. This arrangement is shown above.

Calorimeters may be of the water type or of the electric type in which the quantity and temperature rise of water or the quantity of electric current required to evaporate the liquid refrigerant at a given constant suction pressure may be measured.

Since the obtaining of accurate test data requires that head and suction pressures be held constant at various levels, it is necessary that the rate and temperature of the condensing water and of the calorimeter circulating water, respectively, be under control during the test of the condensing unit.

Since water is required for removing heat from the condenser, and for delivering heat to the calorimeter or evaporator, and since the cost of such water if wasted after one use may be a considerable item of expense, a very desirable and efficient arrangement is to circulate the warmed water from the condenser through the calorimeter, and to circulate the cooled water from the calorimeter through the condenser, so that the same water is reused continuously. Fig. 77 indicates such an arrangement.

In this arrangement, the calorimeter circulating pump draws water from its mixing tank and circulates the water through the calorimeter where it is cooled by the refrigerating action of the refrigerant from the condenser under test, and whence it is discharged to the condenser mixing tank. The condenser circulating pump draws the water from its mixing tank and

circulates it through the condenser where it is heated in condensing the refrigerant from the compressor under test, whence it is discharged to the calorimeter mixing tank to begin all over again. Hot, chilled, and city water connections are provided to each mixing tank so that the temperature of the water from the mixing tank may be regulated as desired. Overflow connections are provided from the tanks so that surplus water will be discharged.

Proper valved pipe connections are provided as shown in the condensing water circulating pipe so that other condensers or condensing units may be tested by connecting them into the system and operating them in lieu of the permanent condenser shown in Fig. 77.

Water Cooler Data

Water cooler data should include water pressure drops, refrigerant pressure drops, and water cooling capacities at various rates of water-flow and inlet water temperatures, and at various suction pressures or refrigerant temperatures covering the range within which the cooler is to be used.

When testing the water cooler, it is very essential that refrigerant temperatures, water pressures and temperatures, and other conditions be kept constant. Requirements No. 2 and 3 under "Condensing Unit Data" above should be observed.

It is especially important that the condensing unit from which refrigerant is supplied be located adjacent to the cooler under test, and that the length of the suction line be kept at a minimum to avoid any unbalancing effect of varying conditions which may exist between the condensing unit and the cooler.

8 Models in 1938 Apex Washing Machine Line

CLEVELAND—Eight models are included in the 1937 line of washing machines recently introduced by Apex Rotarex Corp. Three of the machines operate on gasoline engines, and motor-driven pumps are available on four of the electric units.

An all-white finish is standard on the entire line, and two models have black trim. Wringers and controls are finished in aluminum, and are more streamlined than those on previous Apex washers.

Again featured are the "Apex Big 3"—double dasher, adjustable pressure selector, and modern design and rigid construction.

Wringers, made by Lovell, have electrically welded frames and machine-cut gears sealed in oil.

The four models on which motor-driven pumps are available have capacities ranging from 16 to 20 gallons.

Compact Xervac Model Marketed by Crosley

CINCINNATI—A more compact, streamlined model of the Crosley Xervac, hair-growing machine invented by Dr. Andre A. Cueto of this city, has been designed by Walter Dorwin Teague. First units of the new style are ready for distribution.

Xervac production is now running at about 150 per day, according to Lewis M. Crosley, vice president and general manager of Crosley Radio Corp.

19 Akron Dealers Put On Refrigerator Show

AKRON, Ohio—Promoted by a special section in the local press pointing out benefits of mechanical refrigeration and containing advertisements of the 19 participating dealers, a city wide show featuring 1937 models of refrigerators opened here May 19.

Dealers taking part in the event were:

Best Furniture, Inc. (Electrolux); Carmichael Radio Co. (Norge); Dauntless Plumbing & Electric Co. (Norge, Frigidaire); Dollar Stores, Inc. (Apex); East Ohio Gas Co. (Electrolux); Five Points Hardware Co. (Crosley).

General Appliance Sales Co. (General Electric); E. W. Heintz Co. (Electrolux); McKim Sales & Engineering Co. (Fairbanks-Morse); Ohio Edison Co. (Frigidaire); Ohio Electric Sales Co. (Electrolux, Kelvinator, Stewart-Warner, Westinghouse); M. O'Neil Co. (Electrolux, Westinghouse).

Pittenger Household Appliance Co. (Electrolux); A. Polsky Co. (Frigidaire, General Electric, Westinghouse); Reliable Furniture Co. (General Electric); Sears, Roebuck & Co. (Coldspot); Stump & Dickerhoof Hardware Co. (Westinghouse); Sun Radio (General Electric); Dan H. Willis Co. (Kelvinator).

G-E Home Laundry Division Moves

BRIDGEPORT, Conn.—The home laundry equipment manufacturing division of General Electric Co. recently was moved into the factory purchased from the Remington Arms Co. here.

In its new plant, which is approximately two city blocks in length, the division has approximately 30% more floor space than formerly for washer production, and increased warehouse and shipping facilities.

A 1,000-ft. conveyor system, with three moving assembly lines, is one of the features in the new laundry equipment plant.

Offices for sales, engineering, experimental laboratories, sales promotion and advertising, accounting, purchasing, and the home laundry institute, are directly adjacent.

March Is Best Month in Mueller Brass History

PORT HURON, Mich.—Preliminary figures indicate that sales volume and net income of Mueller Brass Co. for March, first month of the second quarter, were higher than any month in the company's history, it is reported. Orders booked by the company to the end of April are said to be more than double the amount at the same time in 1936.

Net income for the first quarter, ended Feb. 28, was \$237,791, equal to 89 cents a share on 265,518 shares of capital stock. For the same quarter last year, net income was \$123,631, or 47 cents a share.

Morley Bros. to Distribute New Sherman Ranges

DETROIT—Morley Bros., appliance distributor, has been appointed exclusive Michigan representative for Sherman gas ranges produced by the recently organized Sherman Stove Co., Cleveland, declares Carl Crandall, appliance sales manager.

Elements of Performance of Heat Transfer Surfaces Explained

BY F. O. JORDAN

This article on the principles of heat transfer in air-conditioning coils is elementary engineering material intended for the new dealer or contractor in air conditioning, with particular emphasis on the difference between construction of coils for heating and cooling. The article will be concluded in next week's issue.

Every air-conditioning system possesses its heat transfer surface, where the actual "conditioning" of the air takes place. In the case of the air-conditioning system which employs an air washer, this heat transfer surface consists of the "spray bank," which is a chamber in which a bank of finely divided water or mist is maintained through the agency of pressure atomizing sprays or other device.

In all other air-conditioning systems the heat transfer surface consists of metallic surfaces, generally referred to by the air-conditioning engineer as an "air-conditioning coil" because of his interest in its effect upon the air which he desires to condition, and by the simon-pure refrigeration engineer as an "evaporator" because of his primary interest in its effect upon his refrigerant.

The purpose of this article is to study the fundamental laws of nature which determine the characteristics of the air-conditioning coil, which is the heat transfer surface that actually comes in contact with the air to be conditioned, and the cooling coil which is used to cool the water used for conditioning air in the washer air-conditioning system and in the "indirect" air-conditioning system.

This discussion of the laws governing coil performance is given in the belief that an understanding of this topic will assist the air-conditioning engineer in his equipment selection.

If the air-conditioning coil, whose duty it is to defeat the rampant B.T.U. in hand-to-hand combat, fails to do its duty, the efforts of the most carefully designed and efficient condensing unit to do its part in the war on discomfort are wasted.

TYPES OF COILS

The water-cooling coil or the evaporator which is employed for the purpose of "boiling" or evaporating refrigerant to cool water, may be either a smooth length of copper tubing immersed in the water to be cooled, or it may consist of a tube within a tube for reasons which will be described later.

In certain later designs of water coolers, the water-cooling coil may be of the "extended surface" type, rather than of the older smooth type which is made of simple copper tubing coiled into the desired shapes as required by space limitations, while spiral ridges, grooves, or bands sometimes are provided inside the tubing forming the coil.

The extended surface type of water-cooling coil consists of a copper or other metallic tube whose exterior surface has been increased by the addition of thin copper or other metallic fins, for the purpose of increasing the area of contact between water and coil surface, while the purpose of the interior grooves or other shapes is to increase the heat transfer between the refrigerant within the tube, and the interior surface of the tube.

The heat transfer surface which is placed in contact with the stream of air to be conditioned, is never fabricated of smooth tubing, but invariably is of the "extended surface" type of construction. As noted above, this surface generally is known as an "air-conditioning coil" because it is the unit or element which actually "conditions" the air. It is known also as a "convactor," because it does its work of transferring heat primarily by means of "convection."

As stated above, the air-conditioning coil or convactor invariably is of the extended surface type consisting of a tube whose exterior surface is increased by the addition of some form of fin, which is provided for the purpose of increasing the area of contact between the air to be conditioned and the air-conditioning coil.

The reason that such an increase in exterior surface is required, is that the rate or coefficient of heat transfer between air and metallic surface per unit of area is so much less than the rate of heat transfer

between metallic surface and either liquid or vapor.

Therefore, in order to obtain the same quantity of total heat transfer between the air stream and the exterior surface of the coil, that can be transmitted between the interior surface of the tubes forming the coil and the saturated refrigerant vapor or water within the tubes, it is necessary that the exterior surface of the convactor which comes in contact with the air be much greater than the interior surface of the convactor tubing which comes in contact with the refrigerant or the chilled water.

Unless this excess in exterior surface is provided, the interior surface of the tube will be greatly underloaded, because the interior surface could transmit a much greater quantity of heat to the refrigerant or water than will be taken from the air which circulates in contact with the exterior surface of the tube. And remember that an underloaded part which is not doing all of the work of which it is capable represents a waste of materials. Therefore, this excess in exterior metal-to-air contact surface must be provided by the addition of fins.

FIN CONSTRUCTION

Generally the fin is a thin ribbon of copper ranging from five to ten thousandths of an inch in thickness. This ribbon may be bent back and forth upon itself and threaded through with the tubing so that the effect of flat square fins interconnected at alternating edges is produced, or the ribbon may be crumpled at the inner edge and wound around the tube in such a way that a spiral fin results.

The bent ribbon type of fin must be very securely and permanently soldered to the tube, while the spiral fin may be shrunk into or soldered to the tube. It is very important that the bond between fin and tube be perfect and permanent, because a poor bond sets up a great resistance to heat flow, thus resulting in a great loss in capacity. Nor does it suffice to make certain the bond is effective upon or soon after fabrication, for many types of bonds which are effective when first made soon deteriorate into a poor bond after brief usage, so that capacities and efficiencies soon are reduced materially.

In some makes of convectors, the fin is not a separate piece of metal, but is "extruded." In the extruding process, the tube is passed through a machine which squeezes the tube in such a way that a portion of the material of the tube is squeezed up into the form of a spiral fin. Obviously such an arrangement is permanent, as there is no bond to worry about since fin and tube are made of one piece of metal.

Other permanent forms of fin and tube surfaces are the ones in which the spiral fin is rolled or pressed into a spiral groove in the exterior surface of the tube, so that the inner edge of the fin projects into the exterior surface of the tube, while in yet another form, tube and fin are cast in one piece. However, the cast fin-and-tube form requires the use of more metal, and is expensive. Another common form of fin and tube consists of a series of flat plates which are punched, threaded and soldered onto the tubes to form fins.

THICKNESS OF FIN

As we all know, heat flows from points of higher to points of lower temperature. Obviously, this law demands that there be a temperature gradient if heat is to flow. In other words, if heat is to flow through a sheet of metal, all points in the sheet cannot be at the same temperature, but must be higher in the locations from which heat is flowing than in locations to which heat is flowing. For great resistances to heat flow, greater temperature gradients are required to force the flow of heat through the greater resistance to its flow.

This all means that the fin will be warmer than the tube, and that the outer edge of the fin will be warmer than its inner edge which is adjacent to or in contact with the tube. Obviously it is very desirable that in order to obtain the maximum cooling effect from an air-conditioning coil, the temperature of the fin should be

as little higher as possible than the temperature of the refrigerant or the water within the tube. This fact in turn demands a fin whose resistance to heat flow is very slight.

This demand for low resistance to heatflow in the fin requires the use of a material of low resistance to passage of heat (such as copper) made into a fin which is not too thin (not less than 0.005 inch), and which is not too great in extent. The latter requirement regulates the spacing of adjacent tubes between which fins extend to about 1 1/2 inches for 3/4-inch O.D. tubing, and about 2 inches for 1-inch O.D. tubes.

As the thickness of the fin is increased, the cost of the convactor goes up also, so that a point of equilibrium is reached beyond which the gain in heatflow rate is more than offset by the rise in cost. For this reason, with most materials it is not advisable to use fin thickness in excess of .01 inch. In passing it should be noted that the lower limit given above of .005 inch for recommended fin thickness is set as much by strength requirements as by maximum resistance to heat flow.

FIN SPACING

If the purpose of the convactor is to transmit sensible heat flow only, the spacing between fins of a given material, thickness, and surface area should be selected so that the heat transfer from air to exterior convactor surface is just equal to the transfer of heat from interior tube surface to refrigerant or water. Therefore, it would be necessary to provide a different spacing for every different airflow, because the quantity of heat transmitted to the exterior surface of the convactor increases with airflow.

The manufacture of coils with a great number of different fin spacings would be inadvisable from the production engineer's viewpoint, because such extreme absence of standardization would make a special job of every unit, and so send his production costs a-soaring. For this reason a compromise design must be selected in which fin spacing satisfies the usual requirements when all factors are considered.

But as we well know; sensible heat transfer is not the only function of the air-conditioning system, for it must contend with latent heat as well.

Now it so happens that a surface which is doing sensible work can do latent work at the same time, with but little reduction in the rate of sensible heat transfer.

For this reason, when an air-conditioning coil is performing latent work, the total heat transfer taking place between air and exterior convactor surface is much greater than if the maximum sensible transfer only were occurring. Therefore, much less exterior surface is required to balance the total exterior convactor surface transmission from air to surface against the heat transfer from tube interior to refrigerant (or water) when the convactor is to be used in cooling and dehumidifying service than when it is to be used for sensible work only as in heating service.

For this reason, and also in order to enable the summer air-conditioning coil to evacuate the condensation from its exterior surface resulting from latent work, the proper fin spacing for the summer air-conditioning coil is considerably greater than for the heating coil.

The fin spacings commonly used in the convactor for summer air-conditioning service is from four to six fins per inch.

Sensible transmission coefficients for the usual convactor range between five and seven B.T.U. per hour (Concluded on Page 25, Column 1)

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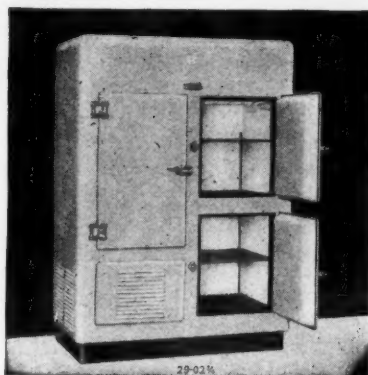
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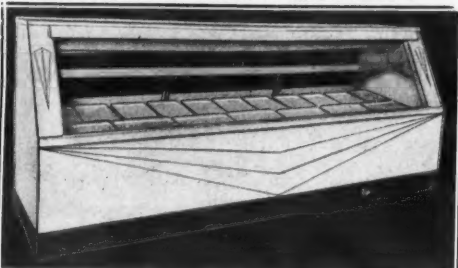
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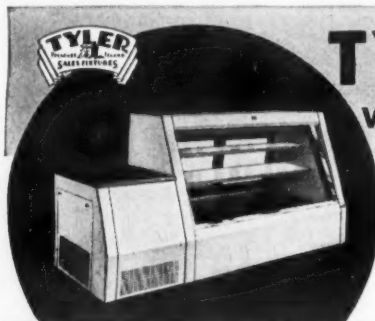
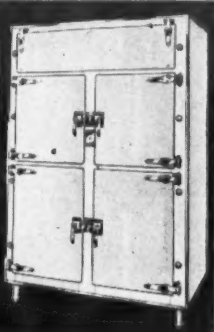
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Apple Storage Construction and Refrigeration Described

By C. D. McLaughlin, Kelvinator Corp.

Presented below is the second half of an article by Mr. McLaughlin dealing with the building of a refrigerated apple storage plant on an individual farm. The first half, published in the News last week, discussed the advantages of this type of system and outlined the procedure for calculating the refrigeration load. This week, Mr. McLaughlin describes construction of the building and equipment.

Some suggestions are offered for the construction of these storages and the selection of the refrigeration systems for the best operating efficiency and balance of the entire system.

Insulation

Suitable provision should be made for insulation. Pennsylvania State College has done considerable work in the study of insulation for apple storages with the idea of utilizing actual products from the farm itself. Such insulation material as dried sawdust—barley hulls—chopped straw—chopped cornstalks—etc. and these have been compared in an actual operating storage of approximately 12,000 bushels capacity with such well known insulation as corkboard, ground or granulated cork, and rock wool. Information on these tests should be available through the mechanical Engineering Department of this college or through the Agricultural Department, Pomology Division.

Much other valuable information on apple storage and fruit storage and the construction of storages suitable for this purpose is available at various other agricultural colleges throughout the country. By writing to the department of pomology of your state agricultural college they will give you valuable reference and information.

General Construction

The actual construction of the storage should follow standard building practice and when new buildings are to be erected or old buildings made over it is advisable to obtain the recommendation of a good architect for this purpose.

Division of Storage

It is advisable to divide the storage into two or more separate rooms completely insulated from each other. These divisions are recommended:

For two separate rooms divide the floor space or the cubical content in the approximate ratio of 1 to 1 or 2 to 3. The latter is preferred.

For three separate rooms divide the floor space or the cubical content into the approximate ratio 1 to 1 to 1, 5 to 3 to 2, or 4 to 3 to 3. The latter two are preferred to the first one given.

As the product loads in these storages are seasonal and there are peak periods of loading and unloading, by dividing the total storage space as suggested, it will be possible to maintain maximum efficiency of operation by maintaining as nearly as possible the maximum load in any one storage room.

Thus, if two fifths of the product are moved out during some great demand period as during the holiday season at the end of the year, the remainder of the product load may all be stored in the other room when the ratio of division is 2 to 3.

The empty storage may then be

shut off or made available for other products. One such grower had followed these recommendations and was able to keep his entire storage in full operation throughout the year netting him a handsome profit besides paying for his refrigerating equipment the first year of operation.

Loading Doors

Provision should be made for loading doors of the "flap" or automatic opening and closing type. This prevents unnecessary heat loads entering the storage during loading operation through excessive air changes.

Ventilating Doors And Openings

Provision should be made in the ceiling and walls to allow ventilation of the storage. A considerable amount of heat generated by the fruit itself as well as the gas given off in the respiratory process may be eliminated through the ventilator openings in the early stage of cooling or whenever it is necessary or desirable to ventilate the storage.

The loading and entering doors are generally adequate for the lower ventilation openings in the mechanically refrigerated storages. Others may be provided if desirable or necessary.

When a storage is properly designed and has sufficient ventilation doors or controlled openings these may be operated manually to assist the refrigerating machine, especially where the capacity of the machine has been found inadequate due to loading at too rapid a rate or miscalculation.

Provision Against Rodents

Special care must be taken to prevent rodents or other destructive agents from entering the storage. Once rats or mice get into the storage rooms it is very difficult to eliminate them. Insulation must be vermin proof or they will build their nest in it.

Wall Surfaces

The entire interior wall surface should be kept relatively clear and of easy access to facilitate the calcining or white-washing of the interior surface annually. This will kill mold spores and other disease fungi

that may have grown and passed to the walls with the circulating air during storage operations.

Condensation on the walls of the storage will cause mildewing and makes an excellent breeding ground for mold spores and disease fungi.

Refrigeration Machine

The refrigerating machine should be selected in two or more units. The sum of the capacities should equal or exceed the total required capacity or calculated peak load during the loading season.

The cooling units or evaporators should also be selected and installed so that each cooling room may be operated on a separate condensing unit or independent of any other storage room; or the entire storage of one or several rooms may be cross-connected to any one condensing unit.

In this way the refrigeration load may be kept balanced economically and the idle units may be considered as "stand-by" units for emergency operation. Only during the loading period will the entire capacity of all units be required.

Cooling Units or Evaporators

The selection of the cooling units or evaporators must be given careful consideration. The direct expansion flooded and semi-flooded types have given very good satisfaction in the past.

Consideration of the balance during the peak loading period and also the balance during the storage season should be given careful thought. Up to the present time the natural-convection cooling units have been selected in the majority of cases.

The blower type sometimes designated as "forced-convection type" is being given more and more consideration especially where duct work is being used to control circulation.

Either type may be made to work satisfactorily. The principal precaution is to keep the air in circulation without a too direct contact with the product while maintaining the proper rate of removal of heat and the correct control of humidity.

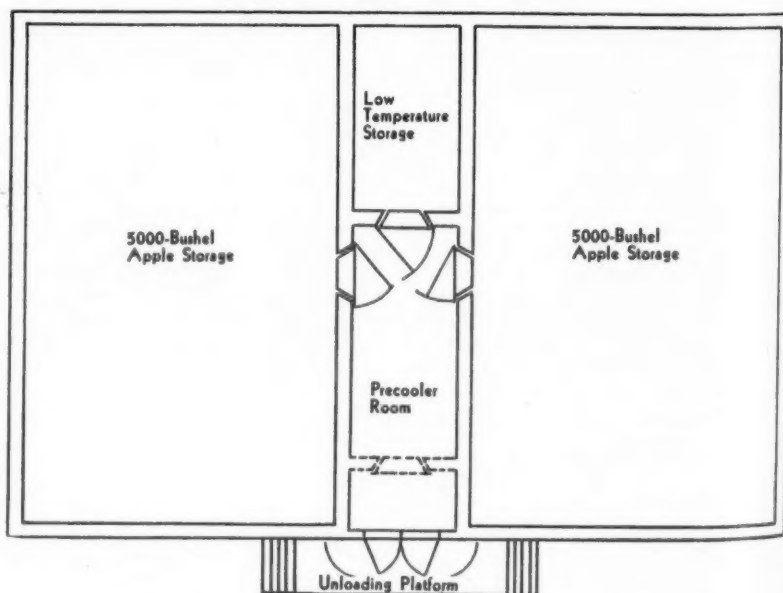
Fall and Winter Management

The apple grower who owns and manages his own storage not only is responsible for the decision as to the proper time to harvest the fruit but is responsible also for the proper management of the storage.

In storing the fruit provision

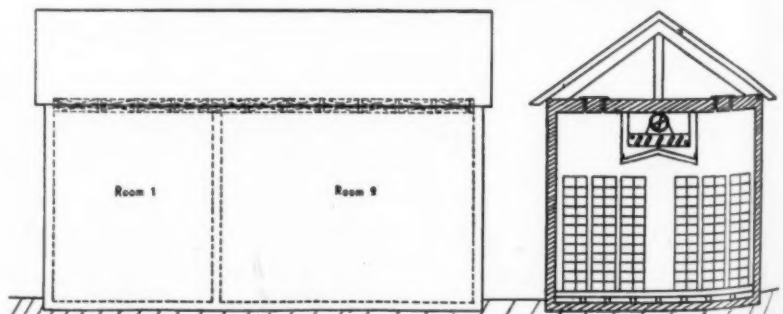
(Concluded on Page 25, Column 1)

Apple Storage Layout



Suggested layout for an apple storage in two equal rooms.

Storage in Unequal Size Rooms



Construction of an apple storage in two unequal size rooms.

Close Attention Needed For Proper Operation Of Apple Storage

(Concluded from Page 24, Column 5)

should be made for the heat to rise through convection as it is given off by the fruit or enters through the walls. This necessitates stacking the crates or containers in such a way that there are definite air spaces between crates and also between the walls and crates.

Sometimes toward the end of the harvest season space is at a premium and crates are stacked close to the walls and ceiling and the spacing between crates lessened. Such loading methods may be done at the sacrifice of slightly higher temperatures of the fruit.

A good distribution of air circulation will enable the heat to reach the cooling units and will maintain the designed refrigeration capacity of the refrigerating machines.

Thermometers placed throughout the storage rooms will indicate the temperature control being maintained. Humidity controls will enable operator of storage to regulate the proper humidity; 85% relative humidity seems most desirable and when it falls below this the minimum figure water should be added to the floor or sprayed into the storage.

Failure to attend to all the necessary details will result in unsatisfactory performance. The refrigerating machine may be doing everything that should be expected of it and yet the operation of the storage will be done at a loss due to inattention to some minor detail.

Cooling units selected for very close balance may frost up during the long running periods at loading season. These should be kept cleared for maximum efficiency of refrigerating machine capacity.

Credit is due the following for some of the information contained in the above:

1. Anthony, R. D. and F. G. Hechler (1929). The Insulation of Fruit and Vegetable Storages. Penna State College Agricultural Bulletin, No. 241.

2. Carrick, D. B. (1929) The Storage of Apples; Cornell Extension Bulletin, No. 189.

3. Comin, Donald (1936) The Common Storage, Its Construction and Management. Ohio Agricultural Experiment Station Bulletin, No. 537.

4. Marshall, Roy E. (1932) The Construction and Management of Air-Cooled Storages with Special Reference to Apples. Michigan State College of Agriculture Circular Bulletin, No. 143.

Differences in Coils for Heating and Cooling

(Concluded from Page 23, Column 5)

per degree temperature differential between air and average convector surface temperature (not refrigerant or water temperature), per sq. ft. of exterior convector surface (both sides of fins plus exterior of tubes).

Prior to its use in connection with the cooling and drying of air, a great deal was learned about the surface type of heat exchanger commonly referred to as a "coil"—during its period of service as a means of heating air. This is unfortunate. It is unfortunate because certain practices which originated during its service in heating have been carried thoughtlessly over into its cooling and dehumidifying service; where they actually are detrimental because of the vastly different problems to be encountered in the latter field.

For example, while the prime object of the heating engineer is to obtain the maximum sensible capacity per unit of coil volume and weight, the most desirable characteristics for the cooling and dehumidifying coil are ability to develop a high latent-to-total capacity ratio without going to the low refrigerant temperatures and suction pressures which penalize that most expensive part of the air-conditioning system, the condensing unit; and the ability to evacuate quickly the moisture resulting from dehumidification so that the coil itself will not be penalized by becoming choked.

While functioning as a heating surface, the duties of the coil are simple. It is called upon to do sensible work only, and the spacing of its adjacent surfaces is determined only by their resistance to the passage of air. But when the coil is applied to summer air conditioning for comfort, its duties multiply.

Problems of One Coat Enamel Production Discussed at P.E.I. Conference

"In the porcelain enameling industry today, one hears much both pro and con about one coat white ware," declared Herman L. Cook, Norge Corp., at the recent conference sponsored by Porcelain Enamel Institute.

"Management insists upon its production mainly because of the cost reduction effected, but management generally expects similar quality to that of two coat white ware.

"One coat ware, generally speaking, presents a major problem to those in charge of porcelain enameling operations.

"No one can doubt the desirability of producing ware in one coat of white. Costs can be reduced 20 to 30%. Thinner finish coatings reduce the hazard of chippage. Production per furnace unit could be increased with quite a saving in overhead.

"The feasibility is evidenced by the fact that many manufacturers of stove, refrigerator, and other porcelain enameled articles are producing ware finished in one coat of white. It is generally agreed, however, that on the average, such articles do not present quite the pleasing appearance the two coated products do.

"Some of the leaders in the industry feel that if we produce a finished with quite a saving in overhead, product too low in quality, we endanger porcelain enamel as a finish.

After all, porcelain enamel is an excellent finish, and we should jeopardize its desirability by producing a finish not up to its standard."

The point most generally expressed by 12 industry authorities commenting on the one coat problem was design, Mr. Cook stated. There can be no sharp edges or small radii. Sharp embosses generally set up strains which tear badly when the heavier coating is applied. No piece can be so flimsy that handling or the distortion of burning will cause the enamel to tear.

"In many cases increasing the metal thickness slightly will give the piece enough strength to withstand tearing or straining caused by handling or firing," said Mr. Cook.

"Loose metal and 'oil can' effects produce tearing and strain lines which are hard to cover with even a second coat of white.

"Therefore, ware should be expressly designed for one coat. Too often ware designed for beauty is practically impossible to produce in one coat of white.

"The two basic raw materials for porcelain enameling, metal and frit, deserve special consideration for one coat white processing. Neither metal, frit, nor the subsequent processing of them has reached the necessary state of perfection so necessary for the day after day production of ware in one coat of white.

"Perhaps the foremost steel fault at the present time is the one called 'poppers.' Poppers evidently are blisters which blow up in the firing operation. The heavier the white coating, the larger the spot resulting from the popper becomes.

"In bad cases of popping it generally takes two more coats of white to cover the spot, and if one is producing exterior parts that are assembled with others, one has quite a color matching problem resulting from the failure of only one part.

"Manufacturers of enameling iron will not admit poppers to be a steel fault, but with the mass of evidence against them, their arguments normally do not carry much weight.

"For one coat ware, enameling iron can not unduly reboil, copperhead, or blister. Also an iron with excess warping tendencies will disturb the white film causing tearing and strain lines.

"As for the needs of ground coat enamels, one can say only that ground coat enamels should be so compounded that with reasonable processing control none of the faults mentioned above will happen.

"As an aid to good ground coat application, one should use the nickel pickle or the cyanide neutralizer. The nickel pickle is preferred, since the nickel flashing prevents too much oxidation in ring, causing copperheads so prevalent in present day enameling irons fired in continuous furnaces.

"The nickel flash also produces good bond without hard ground coat firing. Such firing generally causes shiner-scale; it also produces black specks in the white coating."

Cover coat enamels of high opacity which give two coat reflectance in

one coat are still lacking in workability, Mr. Cook declared. Generally speaking, the super-opaque whites do not work, he said, because of the following defects:

(1) The blister evolved during the white firing do not heal over as well as less opaque enamels.

(2) There is an unusual amount of sag or "orange peel."

(3) The setting-up of such enamels is a problem, since it is almost impossible to keep such enamels in good suspension.

(4) Generally there is a lack of gloss.

(5) Some enamels tear readily in brushing and handling at the extra added weight of application.

At present, mixtures of super-opaque and standard opaque frits are used in one coat work, and such mixtures yield a high reflectance at the one coat weight of application.

Generally speaking, the success of one white coat enameling does not fail due to the white cover coat frits available today.

"Most vital part of a one coat program is the processing," averred Mr. Cook. "In the first place, successful operation depends upon intense and unending supervision of the enameling operations and ceramic control.

"One coat application needs special attention. White spray control by weight per square foot is almost essential. Better still, when automatic spraying is perfected we will have an ideal condition. The best spray guns are another essential.

"Ground coat application, burning, and subsequent inspection need extra care, for as previously pointed out poor ground coat spells disaster to a one coat program. A major essential in ground coat application is frequent enamel screening and magnetic separation.

"If the ware has any clinging metal particles at all, it is almost impossible to screen and run the enamel over a magnetic separator too often.

"Perhaps the most distressing problem in one coat assembled units is the color match. One coat parts are generally bluer than standard two coat ware, and when repainted with another coat of white the difference in color is more noticeable than when two coat ware is resprayed.

"Black pits resulting from popping marks and tearing are not easily covered with one extra light coat of white, and if much of these faults occur, one has ware quite wide in the color range. This condition brings about an unusual high inventory of parts waiting to be color matched in the proper grade.

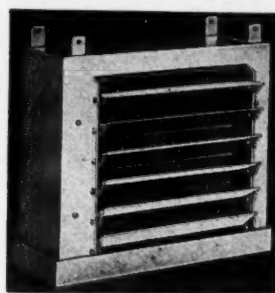
"Many purchasers of porcelain enameled products today object to the bluish cast of the porcelain enameled article finished in only one coat. After all, the sale is made more often on appearance than on anything else today.

"We still have not answered the question as to the advisability or inadvisability of producing one coat ware. The answers received by the production control section of the Porcelain Enamel Institute generally doubt its general feasibility.

"However, management will continue to press for one coat ware, and the men who run its plants must be prepared to do all they can for a successful one cover coat application.

"A theoretical cost reduction of from 20 to 30%, and the less likelihood of thinner coatings to chip, are factors toward which it is worth working."

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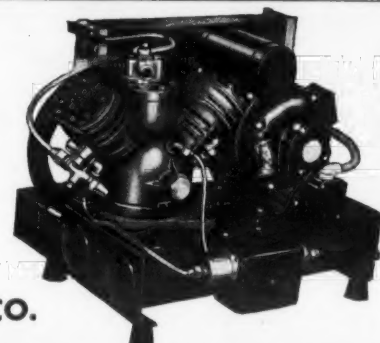
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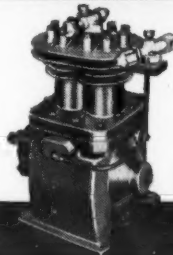
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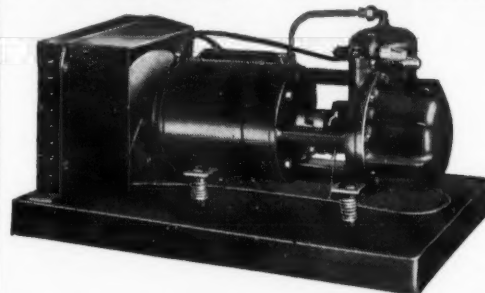
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Philadelphia, Pa., U. S. A., Plant at Lancaster, Pa.

Revolutionary New Oscillating Compressor!



A life-saver for manufacturers not making their own units! Here's the opportunity for Service Companies to save their customers money and give them a new up-to-minute unit at a lower cost than repairing the old one!

Write for Prices and Details!

O'Keefe & Merritt Co.
3700 E. Olympic Blvd.
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GIBSON Condensing Units

Hotels Bars Fountains
Institutions Food Stores
... and All Other Commercial Uses

1/4 H. P. to 15 H. P. Air Cooled—Water Cooled

Get Our Proposition Before You Buy

Gibson Electric Refrigerator Corporation
Greenville Michigan

MILLS COMPRESSORS

for Commercial Use

Mills Novelty Company • 4100 Fullerton Avenue • Chicago, Illinois

MASS PRODUCTION MAKES THE KOCH ECON-O-CASE POSSIBLE

\$10,000.00 could not have bought as good a fixture as an Econ-O-Case a few years ago. Yet today, thanks to modern production methods, Koch has brought the cost of the new Econ-O-Case down to the very lowest price level.

The Econ-O-Case has a welded steel body, insulated with solid CORKBOARD, glazed with three panes of glass. It will display meat, keep meat, and sell meat PROFITABLY.

You need more information about the Koch Econ-O-Case.

WRITE KOCH TODAY FOR DISTRIBUTOR PROPOSITION

KOCH REFRIGERATORS
North Kansas City, Mo.
Export Dept., 364 E. 4th St. N. Y. City

THE BUYER'S GUIDE



WRITE TODAY
FOR OUR NEW
1937 AIR
CONDITIONING
COIL CATALOG

"SLICK" MOTION! INSURES RAPID HEAT TRANSFER

You'll marvel at the "slick" motion of the refrigerant in Manufacturers Fin Coils equipped with THERMO FIN In Tube—the patented improvement. It swirls up one wall and down the other like a bobbed on an Olympic course increasing the effective surface of the fin coil. It really is a "slick" idea, you'll readily agree.

MANUFACTURERS FIN COIL CO.
2505-7 SO. PULASKI ROAD CHICAGO, ILL.

HIGHEST Filtrine EFFICIENCY
FILTERS & COOLERS
WATER FILTERS for
DRINKING WATER—BAKERIES—BOTTLERS
FILTRINE MFG. CO., Brooklyn, N. Y.

GILMERS on display PAY

Attractive displays for Gilmer Belts, Gilmer Bar and Gilmer Hooks. Convenient, compact stock space. Easy to inventory. Take little room. Handy for service men and dealers. Real business builders.

L. H. GILMER CO., Tacony, Philadelphia
"The Oldest Firm of Rubber Fabric Belt Specialists"



TYPE RAS

Electromatic

BACK PRESSURE REGULATORS

Write for our catalog describing refrigeration and air conditioning controls available in sizes and types to suit your requirements.

THE ELECTROMATIC CORPORATION
2100 INDIANA AVE., CHICAGO, ILL.

SQUARE D EVERYWHERE
SQUARE D COMPANY
REGULATOR DIVISION, DETROIT, MICHIGAN
WESTERN DIVISION, LOS ANGELES, CALIFORNIA
SQUARE D COMPANY, CANADA LTD., TORONTO, ONTARIO

PIPE COILS

ACME GUARANTEES
All Steel Pipe Coils To Be Absolutely Free
From Dirt And Free Scale
There is no additional charge for this special treatment.

Jackson

ACME INDUSTRIES, Inc. Michigan

A Survey of Air Conditioning Installations in the United States

● This eighty-four page book summarizes installations of air-conditioning equipment to date in 55 U. S. trading centers. A complete tabulated reproduction of installation data as furnished by utility companies to Air Conditioning and Refrigeration News, bound into a convenient 6 x 9" book. Valuable to dealers, manufacturers, accessory and service organizations. Price per copy **50c**

BUSINESS NEWS PUBLISHING COMPANY
5229 CASS AVE. DETROIT, MICH.

Cleveland Kelvin Home Program Under Way

CLEVELAND—Ground was broken recently for the first two Kelvin Homes in Greater Cleveland, to be constructed for Oil Heating Devices, Inc., distributor for Kelvinator commercial refrigeration products, reports W. R. Kromer, vice president of the company.

One of the homes will be built on Rumson Road, in Rockefeller's Forest Hill, the other on Stratford Ave., in Beach Cliff, Rocky River, both above the average residential sections.

Construction will be in charge of E. J. Bundy, Cleveland builder. It is expected that the homes will be completed within eight weeks, after which they will be opened to the public for inspection.

Built according to regular Kelvin Home specifications, the six-room homes, one of brick and the other of frame construction, will be in the \$11,000 to \$12,500 price class, rather than in the \$7,500-\$8,500 class, the average for the country as a whole.

Present at the ground-breaking ceremonies Thursday were Mrs. H. H. Burton, wife of Cleveland's mayor; Frank C. Cain, mayor, and H. H. Canfield, city manager, of Cleveland Heights; and Mayors Carl A. Stein of Rocky River, W. J. Van Aken of Shaker Heights; Amos I. Kaufman of Lakewood, and W. E. Minshall of East Cleveland.

Construction interests were represented by the presidents of the Cleveland Builders' Exchange, the Electric League, the General Contractors Association, the Residential Builders League, and the Square Deal Builders League.

The dedication was broadcast over radio station WGAR. James W. Clark, formerly with United Broadcasting Co., Columbus, and now with Interstate Advertising Agency, Inc., is handling promotion of the homes for Oil Heating Devices, Mr. Kromer said.

People's Store Opens Bremerton Branch

BREMERTON, Wash.—A modern "Electric City" appliance store has been opened here as the latest link in an expanding chain of electrical outlets operated by the People's store, Tacoma, Wash. department store under the direction of Clayton Thwing, manager of People's electrical department.

Keith Phillips will manage the local branch, assisted by F. L. Pruitt. The store's initial stock of Frigidaire refrigerators will soon be augmented by other lines of electrical appliances.

People's store also recently opened one of its branch electrical shops in Olympia, Wash.

Three Firms to Share New Salt Lake City Store

SALT LAKE CITY—The American Distributing Co., Utah distributor of Gibson electric refrigerators, Valentine Appliance Co., local Gibson dealer, and Robbins Electric Co., handling smaller appliances, will share a large, new store at 45 E. Fourth St. south.

Biesinger Joins Bintz Co., Frigidaire Distributor

SALT LAKE CITY—C. G. Biesinger, formerly representative of the dealer coordination department of the Utah Power & Light Co., is now district representative of the W. H. Bintz Co., Frigidaire distributor here. Mr. Biesinger's territory includes the states of Utah, Idaho, and Nevada.

PATENTS

Issued May 11, 1937

2,079,608. REFRIGERATOR CABINET. Carl P. Erickson, Connersville, Ind., assignor to Rex Mfg. Co., Connersville, Ind. Application June 27, 1933, Serial No. 677,943. 7 Claims. (Cl. 312-193)

2,079,687. REFRIGERATING SYSTEM. Wilfred Fourness, Oakland, Calif., assignor, by mesne assignments, to Fourness Development Corp., Ltd. Application April 4, 1932, Serial No. 602,968. 10 Claims. (Cl. 62-115)

2,080,016. ABSORPTION REFRIGERATING MACHINE. Louis Stark, Vienna, Austria, assignor of one-half to Adolf Pollak-Rudin, Vienna, Austria. Application Nov. 22, 1933, Serial No. 699,244. In Austria Dec. 1, 1932. 2 Claims. (Cl. 62-141)

2,080,103. METHOD AND APPARATUS FOR REFRIGERATING FOOD PRODUCTS. Mikail T. Zarotschenzeff, New York, N. Y., assignor, by mesne assignments, to Z Processes, Inc., Jersey City, N. J. Application April 10, 1934, Serial No. 719,839. 7 Claims. (Cl. 62-104)

2,080,154. AIR FILTER. Richard Strindberg, Worcester, Mass., assignor to Development Associates, Inc., Worcester, Mass. Application Dec. 10, 1932, Serial No. 646,583. 4 Claims. (Cl. 153-71)

2,080,195. ABSORPTION REFRIGERATION SYSTEM. Harry K. Bergholm, Larchmont, N. Y., assignor, by mesne assignments, to Servel, Inc., Dover, Del. Application April 26, 1933, Serial No. 688,027. 12 Claims. (Cl. 62-119.5)

2,080,236. MUFFLING DEVICE FOR COMPRESSORS. Christian Steenstrup, Schenectady, N. Y., assignor to General Electric Co. Application Nov. 21, 1935, Serial No. 50,925. 5 Claims. (Cl. 230-232)

2,080,239. REFRIGERATING APPARATUS. Otto M. Summers, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio. Application April 30, 1934, Serial No. 723,157. 12 Claims. (Cl. 62-99)

2,080,288. REFRIGERATING APPARATUS. Alex A. McCormack, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio. Application June 30, 1934, Serial No. 733,277. 13 Claims. (Cl. 62-115)

2,080,310. REFRIGERATING APPARATUS. J. Lowell Gibson, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio. Application April 30, 1934, Serial No. 723,127. 18 Claims. (Cl. 62-141)

2,080,358. REFRIGERATING APPARATUS. Andrew A. Kucher, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio. Application Dec. 29, 1934, Serial No. 759,756. 11 Claims. (Cl. 62-115)

2,080,369. REFRIGERATING APPARATUS. Bertram B. Geyer, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio. Application March 21, 1935, Serial No. 12,243. 5 Claims. (Cl. 62-108.5)

2,080,387. REFRIGERATING COIL FOR REFRIGERATING MACHINES. Harry C. Hayes, Detroit, Mich.; Anna M. Hayes, administratrix of Harry C. Hayes, deceased. Application Feb. 9, 1931, Serial No. 514,421. 22 Claims. (Cl. 62-8)

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

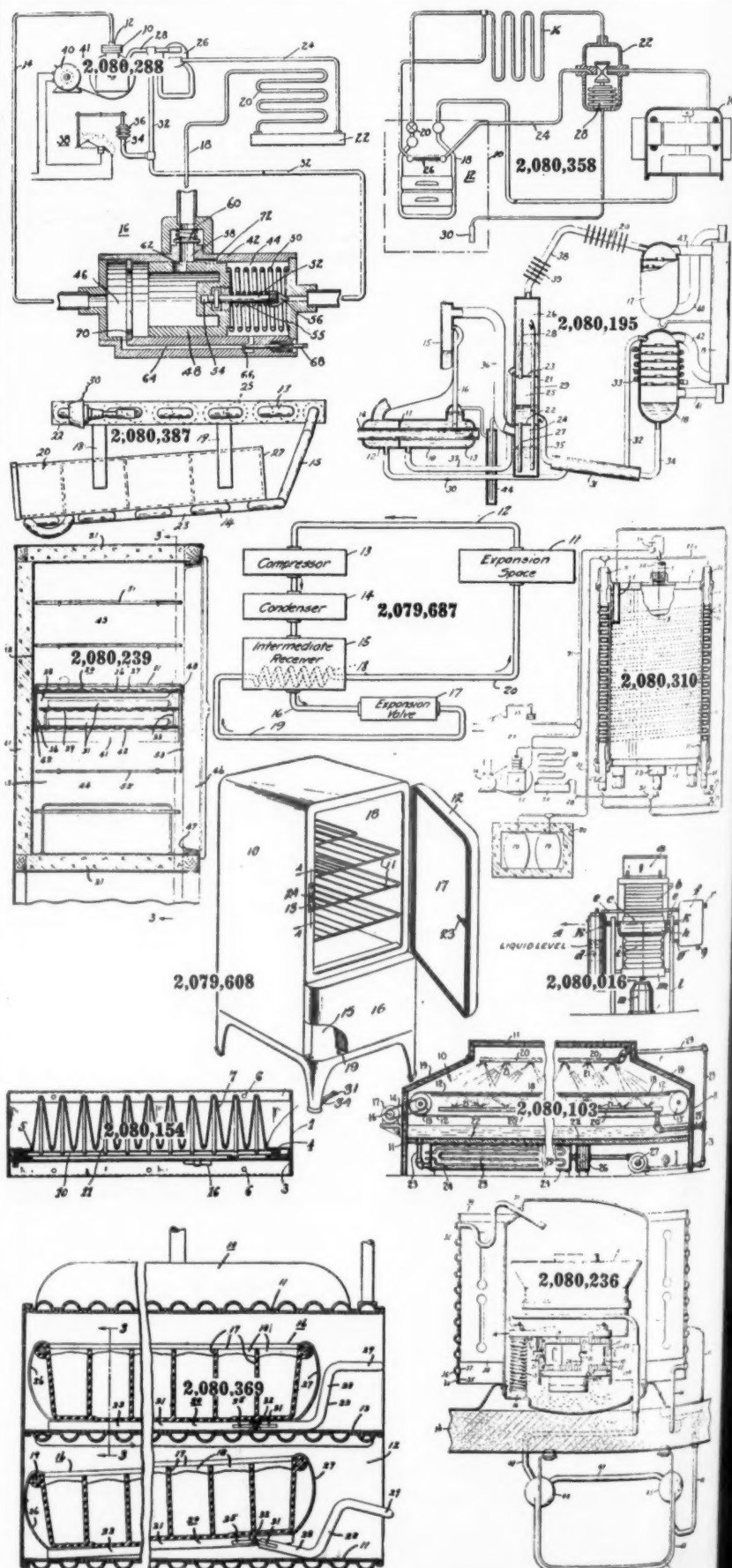
Toledo Grinnell Store Retails Detrola

TOLEDO—Grinnell Bros. branch store here has taken on the new Detrola refrigerators and is staging a sales campaign, according to manager Edward Hurdlebrink.

The Toledo branch is one of several Grinnell stores now handling Detrolas.

Landis Bros. to Retail Hotpoint in York

YORK, Pa.—Landis Bros., Crosley refrigerator dealer, has recently added the Hotpoint line.



AIR CONDITIONING SURVEYS

Summaries of
installations for
comfort cooling
made in 55 U.S.
Trading Centers

CLASSIFIED ADVERTISING

RATES: Fifty words or less, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.
PAYMENT in advance is required for advertising in this column.
REFLIES to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

TERRITORY SALES REPRESENTATIVES—Only men with good records and experience in establishing distributors and organizing territories will be considered. Full particulars regarding education, age, experience, territory previously traveled, and references must accompany first letter. Unusual opportunity for the right man. State salary expected. Confidential. **CURTIS REFRIGERATING MACHINE CO.**, 1938 Kienlen Ave., St. Louis, Mo.

THREE POSITIONS AVAILABLE. Will consider experienced commercial refrigeration salesmen—Duluth, central Wisconsin, Milwaukee—\$200 salary plus bonus. Excellent opportunity for men who can engineer and sell a complete commercial line. Write giving references and complete details as to experience and qualifications to Box 933, Air Conditioning and Refrigeration News.

AIR CONDITIONING and refrigeration engineer. High grade engineer with record of actual experience in installation of commercial air conditioning systems in stores, cafes, and theaters, also in industrial refrigeration, wanted for position as chief engineer by Michigan distributor for Carrier Corp. Must be able to estimate cost, write proposals, and have knowledge of business practice. An unusual opportunity for right man. Strictly confidential. Box 939, Air Conditioning and Refrigeration News.

OLD NATIONALLY KNOWN manufacturer expanding business has opening for two advanced draftsman, one with engineering background and another with practical training. Work involves general design of domestic and commercial compressors of various types. Want men with determination to grow with the company and be in line for advancement in immediate future. Our employees know of this advertisement. Address Box 940, Air Conditioning and Refrigeration News.

BOOKKEEPER, OFFICE MANAGER, thoroughly experienced refrigeration sales and service, domestic (household) rebuilt, and new refrigerators. Good opportunity for right party having necessary experience in New York City area. Write, stating experience and qualifications. **AUDUBON REFRIGERATOR CO.**, 2130 Amsterdam Ave., New York City.

EXPANSION PROGRAM of nationally known manufacturer of commercial condensing units creates openings for several territory sales representatives experienced in establishing commercial distributor accounts. Give full particulars covering age, experience, territories traveled, etc. Box 941, Air Conditioning and Refrigeration News.

POSITIONS WANTED

BY A SALES MANAGER now employed. Do you need a stronger man in your organization who is aggressive, original, with plenty of initiative? Successful sales executive experience with wholesale and factory distribution, utilities, department stores, and dealers. Knows sales training, advertising, campaigns, and every phase of the appliance business. Has exceptional accomplishment record, best references. Write Box 934, Air Conditioning and Refrigeration News.

REFRIGERATION ENGINEER qualified in all phases of commercial refrigeration engineering desires position as refrigeration and air conditioning equipment installation supervisor. Twelve years technical and practical experience with reputation for first class installations in large city. Capable of estimating material and labor costs. Can educate, direct, and handle installation crews. First class references. Box 937, Air Conditioning and Refrigeration News.

R.A.C.I. GRADUATE formerly with U. S. government as project manager and construction engineer wishes position with factory or distributor in West or South. Also experienced in executive and public relations. Will consider anything but direct selling of the promotion type. Box 938, Air Conditioning and Refrigeration News.

RESEARCH ENGINEER available. Thirteen years' refrigeration experience. Has worked with small absorption systems and compression units. Commercial sales engineering experience with compression units and air conditioning. Some sales promotional work for distributors and dealers handling refrigerators for rural markets. Please specify nature of duties required in your reply. Box 942, Air Conditioning and Refrigeration News.

BUSINESS OPPORTUNITY

FOR SALE—Refrigerator service business in fast growing Long Island community. Built up on reputation established 5 years. \$2300 yearly business can be doubled. Fine light basement shop. Supplies and equipment. Low rent. Sacrifice on account illness. \$600 for quick sale. Box 936, Air Conditioning and Refrigeration News.

FRANCHISES WANTED

ESTABLISHED MANUFACTURERS representative calling on the refrigeration supply jobbers in following territory: New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, North Carolina. Can handle one or two additional lines on a commission basis. Box 932, Air Conditioning and Refrigeration News.

FRANCHISES AVAILABLE

COUNTY DISTRIBUTORS for Illinois for outstanding air conditioning and stoker line. Must have one thousand dollars to invest in merchandise in return for exclusive distribution in territory allotted. Few counties still open. Write at once. **POST OFFICE BOX 65, La Grange, Ill.**

EQUIPMENT WANTED

WANTED—Electrolux repossessions or close-out stocks. State models, condition, and cash price wanted. Box 931, Air Conditioning and Refrigeration News.

EQUIPMENT FOR SALE

MAJESTIC SURPLUSES. 1,000 complete units "as is" \$15.00. New Majestic capacitor motors \$4.50. Evaporators \$4.00. Copper condensers \$1.25. Electrolytic condensers 75¢. Two hour test cabinets with air lifts and Bristol recorders. Set of five \$37.50. Cost \$400. 3/16" tinned copper tubing 204 lb. **G & G COMPANY**, 5801 Dickens, Chicago.

FRIGIDAIRE. PRICE for quick sale. 350 repossessed and used family size General Motors Frigidaires \$25.00 each F.O.B. Opportunity to stock up now. All in good mechanical condition. **ELECTRIC COMPANY'S OUTLET**, 2701 W. North Ave., Chicago, Ill.

DEALERS ATTENTION! We have hundreds of used and reconditioned electric refrigerators and household and commercial units of nationally known makes from 1/4 to 2 horsepower, at real low prices for resale. Zerozone refrigerators \$10.00 each. Copeland \$12.50. Write for information. **MACKLAM REFRIGERATOR SALES CORP.**, 220 W. Huron St., Chicago, Ill.

ATTENTION service men, dairies, and refrigeration dealers. I have the following equipment for sale. Coils: 59 T.F. at \$15.00; 110 T.F. at \$8.00; 112 T.F. at \$10.00; 117 T.F. at \$12.00. These are just some of the household coils. They are all new Frigidaire. Also a lot of commercial coils. State type you wish and we will try to fill for you and give price if desired. Also have some Model Y compressors completely reoperated like new—\$60.00. Have some Models C.N. and also smaller compressors. Prices on request. Frigidaire, Wagner, and Century 1/4 H.P. 110-220 60 cycle motors fully rebuilt, while they last \$5.00 each. All orders must be accompanied with small deposit. Balance Sight Draft. Goods will be shipped freight charges collect. No charge for crating. **REFRIGERATION SURPLUS JOBBERS**, 5622 Woodland Ave., Cleveland, Ohio.

REPAIR SERVICE

MAJESTIC AND GRISBY-GRUNOW refrigerator and radio parts service. We have purchased all of the original Grisby-Grunow Majestic refrigerator and radio parts service. We are the only original, the only genuine, the only direct factory parts and service anywhere in the world. Beware of inferior replacements and parts. Everything we sell is factory guaranteed. Send for price and dealerships. **G & G GENUINE MAJESTIC REFRIGERATION & RADIO PARTS SERVICE**, 5801 W. Dickens Ave., Chicago.

HERMETIC UNITS REPAIRED and exchanged—Majestic \$18.50—Westinghouse \$25.00—Gibson \$18.50—General Electric \$25.00—all model household units. Prices F.O.B. our factory—six months guarantee. Complete machine shop service on all makes domestic and commercial. **ALLIED REFRIGERATION PRODUCTS CO.**, 1947 Flushing Ave., Brooklyn, N. Y.

GENERAL ELECTRIC and Majestic hermetically sealed units repaired and exchanged. Guaranteed work. Wholesale prices quoted f.o.b. Chicago. **AMERICAN REFRIGERATING ENGINEERS, INC.**, 2257 Silverton Drive, Chicago, Illinois.

DOMESTIC REFRIGERATION controls repaired. Ranco pencil types \$1.75, all others, \$2.00. All work unconditionally guaranteed for six months. Jobs completely refinished. Prompt service. **UNITED GAUGE AND INSTRUMENT CO.**, 436 West 57th St., New York City.

CONTROLS REPAIRED for the refrigeration and air-conditioning trade. Any make, almost any type. Every control individually calibrated. Steam traps, packless valve glands, and regulators repaired. If it contains a bellows, Hallectric can repair it. Service prompt, prices right, guarantee reliable. **HALECTRIC LABORATORY**, 1793 Lakeview Road, Cleveland, Ohio.

Crosley Uses Advertisement As Dealer Promotion Piece

CINCINNATI—New dealer promotion piece issued by Crosley Radio Corp. is a blow-up of the Crosley refrigeration advertisement scheduled to appear in the June issue of McCall's magazine.

"The Colonel's Lady and Judy O'Grady both demand the Shelvador," is the approach used in this color broadside to introduce the Crosley five-point sales story. Pictures and specifications of all models in the 1937 Shelvador line are included.

Radio & Laundry Equipment Outlet Reports Triple Sales

INDIANAPOLIS—The Capital Paper Co., Fairbanks-Morse refrigerator radio and laundry equipment distributor, reports sales in the Indianapolis territory this year have more than tripled the preceding year's record.

The firm held open house during the week of May 31 for Indiana dealers, during which merchandising plans for the line of Fairbanks-Morse radios were discussed.

27 Erie Dealers Stage 'Refrigerator Jubilee' & Prize Essay Contest

ERIE, Pa.—With the cooperation of the Dispatch-Herald, 27 local dealers are staging a "Refrigerator Jubilee" in which \$500 worth of credit on purchase of refrigerators is being offered as prizes to the 23 persons submitting the best answers to the question, "Why can anyone afford to own an electric refrigerator?"

The actual prize tokens are credit slips redeemable on the purchase of machines at any one of the participating dealers. If a winner has bought a refrigerator during the jubilee, which began May 10 and will continue through June 30, cash will be awarded.

Participating dealers are:

Anderson-Stromenger (Grunow); Harley D. Carpenter (Universal); Carl B. Chaffee (Norge); Conrad's (Crosley, Norge); Crown Electric Co. (Westinghouse); Electric Specialty Co. (Frigidaire); Epp Furniture Co. (Briggs, Leonard, Norge); Erie County Maytag Co. (Stewart-Warner); Erie Radio Co. (Crosley, Leonard); Lyman Felheim Co. (Frigidaire, Westinghouse); Froess Bros. (Westinghouse); General Sales & Service Co. (Kelvinator); R. J. Gensheimer (Westinghouse); Kinem & Glauser (Leonard); Lawrie Bros. Furniture Co. (Frigidaire); Modern Appliance Co. (Kelvinator); Reliable Home Furnishing Co., Inc. (Apex); Arthur F. Schultz Co. (General Electric); Sears, Roebuck Co. (Coldspot); Stanley Bros. Co. (Kelvinator); Star Electric Co. (Westinghouse); C. H. Walden Co. (Norge); Warren Radio Co. (Copeland); Wayne Furniture Co. (Stewart-Warner); The Winter Co. (Kelvinator).

Calgary Dealers Take Advantage of New Power Rates

CALGARY, Alberta, Canada—Establishment of a new combination electric rate by the municipal and private utility companies serving Calgary was the basis of a recent promotion campaign by Calgary electric refrigeration dealers.

Sixteen dealers cooperated in an advertising campaign that featured an explanation by the utility companies of load requirements under the new rate. The utility message pointed out that a refrigerator would account for 250 of the 1,500-watt installed appliance capacity needed to have the new rate apply.

Dealers participating were:

Adams Radio Parlors (General Electric); Alberta Furniture, Ltd. (General Electric); Bruce Robinson Electric, Ltd. (Frigidaire); Brydson's Furniture Store (Leonard); Calgary Furniture Store (General Electric); Clayton's Radio Shop (General Electric); The T. Eaton Co., Ltd. (Viking); Electrical Appliance Shop (Norge); General Sales, Ltd. (Frigidaire); Heintzman & Co., Ltd. (Hosco); Household Appliances (General Electric); Howe's Music Store (General Electric); The Neilson Furniture Co., Ltd. (Westinghouse); Sykes-Imperial Furniture, Ltd. (General Electric); Webster Electric Co. (Leonard); Wilkinson Electric Co., Ltd. (General Electric).

'100' Club Formed to Boost Gas Refrigerator Sales

PHILADELPHIA—To get each of its salesmen to sell more refrigerators, the Philadelphia Gas Works Co. has created the "100 Club," membership in which will be restricted to those who sell at least 100 Servel Electrolux refrigerators this year.

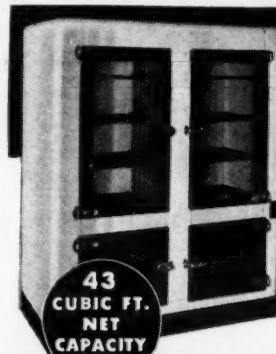
To every man that reaches his monthly quota, one link of a 12-link gold watch chain is promised. Every link is engraved with a sign of the zodiac and may contain one or two jewels. Each month one jewel is given to the first man to reach his quota, another to the man highest in sales for the period.

Finally, a watch will be awarded each salesman who gets his 100 units for the year, the value of the watch depending largely on the volume of sales in excess of 100.

Complete records of the year's sales will be maintained on two large boards erected in the sales-meeting room, silver stars indicating a full monthly quota and gold ones showing the highest volume for the month.

If a salesman fails to get his link one month, he can earn it the next by sales in excess of his quota plus one additional sales as a penalty.

THE BUYER'S GUIDE

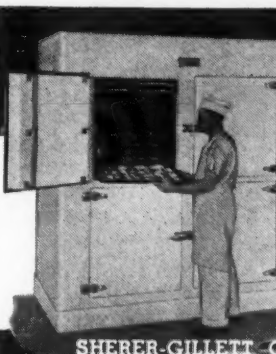


TYLER'S WELDED STEEL REACH-IN BOX

SALES SENSATION OF 1937

Big waiting market for food stores, restaurants, bakeries, tap rooms. New principle "Stratosphere" cooling. Maximum efficiency and capacity in small floor space. Dealers report tremendous demand. Big sales opportunity. Write today.

TYLER Sales-Fixture COMPANY
DEPT. EX. NILES, MICHIGAN



NEW SHERER Retardo... Baker's Box

Every progressive Baker should own a Retardo—it is new... different... and produces genuine RESULTS. For you, Retardo represents another SHERER money-maker with splendid sales and profit possibilities... a new field for compressor sales.

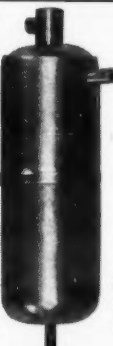
Write for information about the Retardo... about Sherer's valuable Case and Cooler Franchise... there are still some fine territories available.



SHERER-GILLETT CO., MARSHALL, MICHIGAN
Serving Food Merchants Since 1852

COMPRESSOR PISTONS OF ALL KINDS LARGE OR SMALL 24 YEARS OF MAKING BETTER PISTONS

Submit Blue Prints and have us quote on your requirements
SPENCER-SMITH MACHINE CO., Howell, Mich.



RECEIVER TANKS—COMPRESSOR BASES—MOTOR MOUNTING BASES—AND OTHER STAMPINGS AND ASSEMBLIES FOR REFRIGERATION AND AIR CONDITIONING.

Our Receiver Tanks are made with drawn shells. Assembly by Hydrogen Brazing produces tanks chemically clean and free from dirt. Can furnish tanks painted if desired.

Brazed in Controlled Atmosphere

Acklin

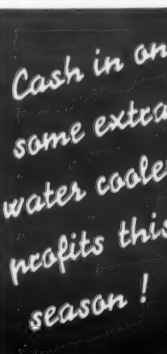
THE ACKLIN STAMPING CO.
TOLEDO, OHIO
Chicago, Ill.
Detroit, 2-165 Gen. Motors Bldg.



PURO ELECTRIC WATER COOLERS

Thoroughly reinforced all steel attractively finished cabinets.
Complete line of different Models and Capacities.
Write for details and sales prices.

Puro Filter Corporation of America
440 Lafayette Street, New York City Spring 7-1800



Sell Cordley Electric Coolers

WATER coolers will be sold in increasing volume this spring and summer. Business men are buying new equipment, modernizing plants and offices. Cash in on this profitable business with Cordley Electric Water Coolers... made by an organization that has specialized in water coolers since 1889... small, compact, inexpensive, good looking units... a complete line... an easy way to get added sales and extra profits. Write for details.

CORDLEY & HAYES

141 Hudson Street New York City

KOLD-HOLD ICE CREAM CABINET CONVERSION UNITS

Modernize old equipment... provide much greater storage space for packaged goods... eliminate brine leaks and attendant odors... reduce weight and simplify installation... require a minimum of service... provide ideal temperatures under all conditions... cost less to operate... quickly and easily installed in any standard cabinet at small cost.

Write for Complete Facts

KOLD-HOLD MFG. CO. - LANSING, MICH.

As Outstandingly Superior as the KOLD-HOLD System of Truck Refrigeration

